THE AMERICAN
GAS LIGHT JOURNAL

VOL. XCV., No. 16. NEW YORK, OCTOBER 16, 1911. WHOLE NO 1,897.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

*Method of Protecting Pipe Under Street Railway Tracks, by Mr. N. H. Matlack 241
Development of Hotel Gas Appliance Business, by Mr. W. F. Clausen. 242
High Pressure Gas Distribution, by Mr. C. S. S. Forney 243
*Our Investigating Department of the San Diego Consolidated Gas and Electric Company, by Mr. C. H. Hunt 244
Some Routine Business, Pacific Coast Gas Association 246
Report of Board of Directors—New Members—Report of Committee Preside t's Address—Election of Officers—Report of Librarian.
The Gas Meter, by Mr. W. M. Du Val 247
OFFICIAL NOTICES—
Sixth Meeting, American Gas Institute..... 248
Seventh Annual Convention, National Commercial Gas Association..... 248
EDITORIALS—
Briefly Told 249
Another Gas Engineering Course, Univerity of California—Seventh Annual Meeting, Empire State Gas and Electric Association—The Sofia International Exhibition—Prize Winners, N. C. G. A.—Current Mention.
Experiences, Pacific Coast Gas Association, by Mr. J. D. Kuster... 251
A Quick Connection—How a Canning Company was Satisfied—How a Deposit Demand was Arranged—Installing New Connections in Old Gasholder—A Dangerous Repair Job.
Rates for Gas Service, by Mr. C. L. Cory..... 252
Important Patent Decision on Gas Producer Operation..... 253
Small Output of Kansas Coal. Strike of 1910 Reduces Production by Two Million Tons..... 254
MANAGEMENT AND COMMERCIAL METHODS..... 254
*A New Glass Shade—*Another Type of Shade.
Publications..... 254
Recent Patent Issues..... 254
ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 254
Proposed Gas Plant for Manila, Philippine Islands—Mr. Rieha and and Associates to Build at Sumter, S. C.—Personal—Public Lighting of Boston—Con'ract for the Gas Machinery Co.—Will "Mister" Wyatt L ok at This Receiver for Medina, N. Y.—A Bit of Its History—A Handsome Booth Contract for the Bartlett Hayward Co.—A Cedar R pids (Ia.) ontest—New Selling Rates, Clinton, Mass.—The Albany (N Y) Gas Educational and Social Club—Contract for the Lloyd Co.—Carnival Week in Cambridge, Mass,—Good Work in Leominster, Mass.—And Other Items.
The Market for Gas Securities..... 256
Meeting Times of the Various Gas Associations..... 256
Public Lighting Table for October, 1911 (Advertising Section)..... 27

Method of Protecting Pipe Under Street Railway Tracks.

[Prepared for the JOURNAL, by MR. N. H. MATLACK.]

The most commonly used methods of protecting pipe under street railway tracks are the two presented here, the first of which "A,"

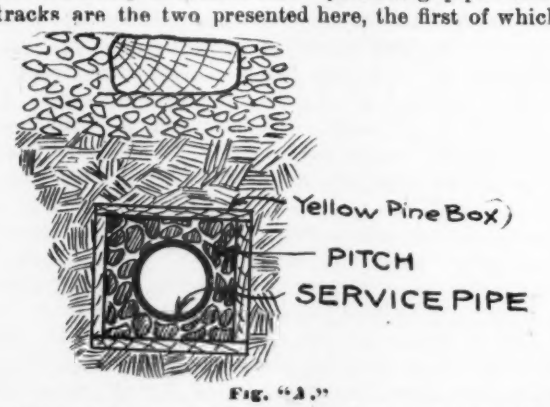


Fig. "A."

is a box made of ½-inch by 3-inch, or 1-inch by 3-inch, yellow pine. The pipe is laid in the box, then the latter is filled with hot pitch, after which a cover is placed on it.

In another method, as shown in sketch "B," a salt-glazed, vitrified

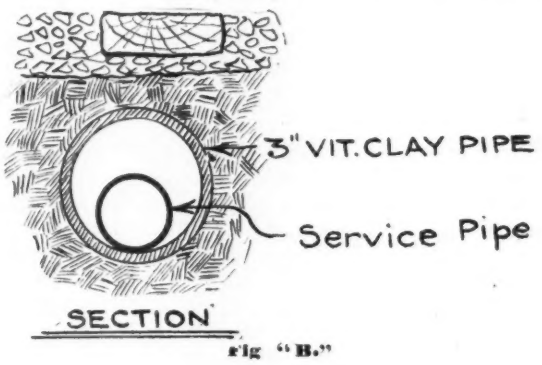


Fig "B."

clay pipe is used instead of the box used as in the first (or "A") method. Although there seems to be differences of opinion as to which of these two methods is the better, both are very good in protecting the pipe.

The cost of 3-inch, salt-glazed, vitrified clay pipe is between 12 and 13 cents per foot; a length, being 2 feet long and weighing 7 pounds, with a shell ½-inch thick, would, therefore, cost between 24 and 26 cents.

Another method that is being used to some extent has to do with coating and wrapping the pipe. The coating used is composed of coal

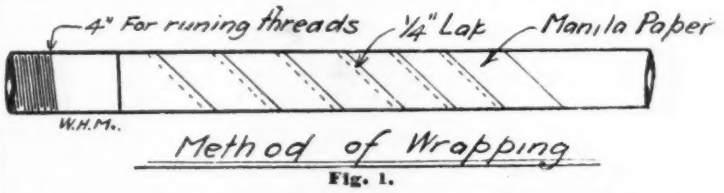


Fig. 1.

tar, pitch and a little lime, the material used for wrapping being either of paper or cloth. Where the latter is used only one wrapping is given the pipe, with two coats of the coating, while where paper is used the pipe must be coated, wrapped, coated, wrapped and coated the third time. The coating is applied after the pipe has been heated or steamed by the method shown in the drawing, Fig. 2.

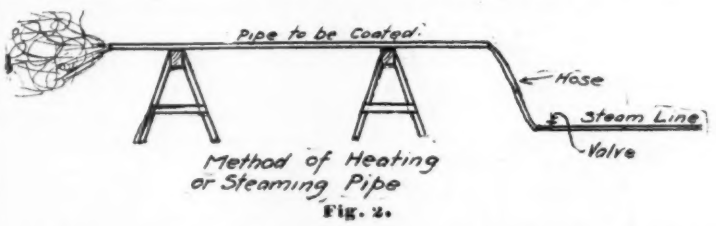


Fig. 2.

In mixing this coating it is necessary to use equal parts of coal tar and pitch, with just enough lime added to overcome the brittleness tar and pitch would assume alone. In coating pipe at least 4 inches on each end should be left uncoated, in order that tools may be used with less clogging when running threads. These ends may be coated and wrapped after the connections have been made and the pipe tested. A pot of the coating and a roll of wrapping material, either of cloth or paper, should be carried in the service cart at all times for just such work as this.

Where paper is used for wrapping material a heavy manila quality 3 inches wide should be procured. The wrapping should be done

spirally and lapped ¼ inch, as shown in Fig. 1. This paper costs 6 cents per pound.

The pipe is heated by steam, as shown in Fig. 2, the process of steam heating preventing the coating from cooling and becoming hard before the wrapping paper or cloth has been applied. In heating or steaming the pipe steam is passed through it by means of a hose, to which a nipple made of ½-inch or ¾-inch pipe is attached, the hose

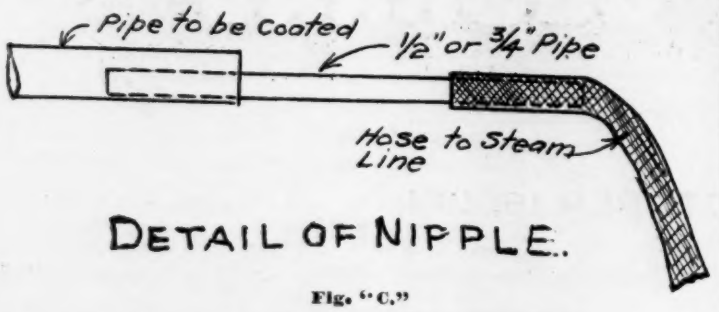


Fig. "C."

being directly attached to the live steam line. In this way the pipe can be easily handled as well as quickly.

Costs of Coating and Wrapping.—The costs of coating and wrapping 1¼-inch pipe are as follows:

Per Foot.	Cent.
Coating	.00085
Paper	.00045
Labor	.00375
Total cost per foot	.00505

The cost of coating and wrapping 3-inch pipe is as follows:

Per Foot.	Cent.
Paper	.00184
Coating	.00096
Labor	.00587
Total cost per foot	.00867

Labor for coating 8,900 feet of ¾-inch pipe is $23.10, or .0026 cent per foot. Labor for coating 7,237 feet of 2½-inch pipe is $34.65, or .0048 cent per foot. One pound of coating will cover 40.2 feet, and is sufficient for two coatings on one length of pipe. One pound of paper will cover 73.6 feet of 1¼-inch pipe.

Development of Hotel Gas Appliance Business.

[A paper prepared by MR. W. F. CLAUSEN, for the Twentieth Meeting, Michigan Gas Association.]

The subject of hotel appliances has been so ably written up, and so thoroughly discussed by men of high standing and large experience in the gas business, that no gas man can afford to neglect reading their articles on this subject as they appear in our leading gas JOURNALS, from time to time. They have contained many valuable suggestions and helpful hints which have enabled us to put forth more clearly and forcibly the superiority of gas appliances for hotel kitchen use.

At the last meeting of the National Commercial Gas Association, Mr. Graves, then of Atlantic City, read a paper before that body which was very instructive; and, coming from one who has been successful in the placing of hotel appliances, ought to be of great help to us. The discussions that followed were spirited and interesting, and if this paper will draw out the same response from the members of this Association, I shall feel repaid, for it was only with the idea of "starting something" that I consented to write on this subject. I would also refer you to Mr. Philmer Eves' paper, read before the *Chefs'* meeting at Indianapolis, which contains many valuable suggestions helpful to any salesman of hotel appliances.

Hotel equipment is something in which every gas company is interested. We may not have the shops and factories to equip with gas using appliances; but, like the poor, the hotels are always with us. They are a source of revenue greatly to be desired; but, how? "Ah! That's the question."

The acquiring of hotel business has more angles to it than any other, I believe. In selling almost any other appliance we go to the proprietor, state our case, show what we have and can do, and, if we interest him and finally satisfy him, he says, "All right, go ahead and install it." He then instructs his men to use it, and the sale is made. Not so with the hotel man. We may have interested him to the point where he believes the work in the kitchen could be greatly facilitated by the use of gas ranges, broilers, etc., and then he says, "Well, let's go see the *chef*." It is he who must be satisfied, for, as king of the kitchen, he must be handled with care, and with him lies success or defeat in getting your appliances installed. How often have I heard, "If I could only have induced that *chef* to say he wanted it, I could have made the sale." In one of the largest salesrooms of hotel gas appliances in the country no attention is paid to the proprietor until they know just where the *chef* stands; with him on your side the battle is half won and success ought to be yours. Three things are absolutely necessary to secure hotel business—salesmanship, goods and attention after goods are sold.

To be a successful salesman one should have the versatility and natural ability to be able to talk to and obtain the interest of the *chef* and his assistants, as well as the manager or proprietor who sits back of the door marked "Private Office." He must absolutely *know* the goods he is selling, all the advantages of gas over coal and other fuels, and to present them in a convincing manner. The arguments in favor of gas are so many that no difficulty should be experienced in showing the many advantages of gas as fuel. The following are a few of the most important:

(a) To be able to have instant service; no starting a fire 2 hours before you need it.
(b) No fireman to start it or to carry the coal in and the ashes out.
(c) No noise, waking up the guests at an unreasonable hour.
(d) Keeps the kitchen cool, also the sleeping rooms adjoining.
(e) All the help will appreciate a cool kitchen.
(f) No "poor draft" complaints, and meals are ready and on time.
(g) No danger from overheated chimneys.
(h) An even baking oven.
(i) The economizing of space and more work done with fewer ranges.
(j) No large repair bills.
(k) The chef has no grounds for complaint, and the work ought to be done on the minute.
(l) Expense from fuel consumption ceases when work is done and gas is turned off.

And above all, with gas at $1 per 1,000, a good gas range in the hands of a careful chef can be operated to the entire satisfaction of the man who pays the bills. This is a broad statement, but it is being done in thousands of kitchens to day. Men take into consideration not only the difference of the cost in fuels, but the saving in cost of labor. These are items which cannot be overlooked, and must not be underestimated, in presenting your claims to the prospective buyer, for he knows that these things enter actively into the successful management of his hotel. The salesman must be practical, must know how to lay out a kitchen, where to place the boiler, the ranges and other appliances; must know the dimensions and their working capacity, and *not make claims that cannot be fulfilled.* Study the conditions and needs of your prospect and work up to them with all the confidence that should result from an intimate knowledge of your subject, remembering all the time that you have the gas company back of you, and it has got to "make good" all you say. It is altogether a different proposition than just to sell the article and, therefore, we as the company must first give our salesman a line of ranges and appliances to sell that are worthy and that we know are good. Anyone who has just looked in on a hotel kitchen during the meal hour will agree that the best is none too good for them, for the kitchen then is a mighty busy place and there must be no "hitches" in the operation of the appliances. They must have goods of quality and merit that have in their construction better material and better workmanship, that require less attention for repairs and are less liable to give the users trouble and cause for complaint. To sell this class of goods means a satisfied consumer. The ranges must be made to stand the wear-and-tear given them by the use of heavy kettles and pans. Smooth tops with probably one or two individual burners, commonly known as the "French Top," are the kind that give good satisfaction and are wanted by most the chefs. This top burner arrangement has one large individual burner for short order work, the long burners reaching from front-to-back, thus heating the entire top through the slotted grates. There has lately been added to this, by one manufacturer, an auxiliary burner in the rear, for the purpose of keeping the soup-tureen or other dishes of like character warm without using the long burners, thus saving

gas and wasting no heat during the times when the balance of the stove is not needed.

The single burner type has met with approval in a great many places, but the manufacturers are chiefly going to the smooth top. One manufacturer recently brought out a new idea in top burners, but having the smooth top effect it is made easier for the *chef* to shift the kettles. The ovens must be sufficiently large to "take" the baking pans generally used. The burners of this oven ought to be so arranged as to be easily removed out for cleaning purposes. This not only applies to the oven burners, but to every part of the entire range, oven-linings, top grates and burners.

Broilers should be constructed on the same lines, substantially and well built. A new departure in these is the adjustable rack, operated with a lever handle on the side, which makes it possible to raise or lower the rack to height needed to broil properly whatever may be on the grid without moving same from one rack to the other. A chef at one of our hotels who has a stationary rack on the broiler suggested that we cut off the 5 top racks in steplike fashion, which allows them to drop the grid from one to the other without pulling it out entirely. This was done and it works out very nicely, takes but tittle work and pleased the chef immensely.

The roasting oven should be so constructed as to roast quickly and evenly. Special stress should be put on this point when selling: That it is possible to both roast and broil at the same time with the same heat, which is not possible in a charcoal broiler. The work on these broilers is most always satisfactory, and it is the one article that makes it possible to break in with in any particular when it seems as if we would never be able to get any gas appliances installed there. Cake griddles and toasters are articles of special merit for hotel use and are easily sold. Bakers, fryers, pastry ovens, carving tables, coffee roasters, coffee and water urns, dishwashers, egg boilers, steam tables, meat broilers, oyster cookers, poultry singers, roasters, water stills, waffle irons and water heaters—all these are appliances that can be used in hotel kitchens, and, by keeping a watchful eye, many of these can be installed by constantly keeping after this business.

The most important item of the 3 first mentioned, I believe, is that of maintenance, as hotel gas appliances once sold must be looked after, kept clean and in good working condition by the gas company. A chef simply will not, or cannot, keep the gas using appliances in good condition. They are used to working on a coal range and the porter looks after coal and the ashes. The chef, not being taught to do this, does not look at it as a part of his duties; and I don't suppose it is. So, it is up to the gas company to see that the appliances are kept in good condition if we expect to get the proper results. A competent man should be put on this work, one who thoroughly understands the proper regulating of the burners and the operation of the appliances.

By keeping a man steadily on this work he also becomes acquainted with the work of the kitchen, and can suggest new appliances and add constantly to those already in use. This can only be accomplished by maintaining those already installed in a manner both satisfactory and pleasing to the chef. How often ought the appliances be inspected? Some gas companies do this weekly, others every 2 weeks, and in my estimation it ought not to be allowed to go any longer than this. The business is good and is worth looking after.

High Pressure Gas Distribution.

[Prepared for the Nineteenth Meeting, Pacific Coast Gas Association, by Mr. C. S. S. Forney.]

The service furnished to towns, villages and rural communities from the central generating station by high pressure trunk lines may be considered as suburban gas distribution. The problems in connection with this work, as to engineering and construction features, are simple and direct, and have a multitude of precedent and example to fortify and confirm the theories which any engineer will evolve by consideration of the cases presented.

The financing and organization of a company for this work required bold conception and conservative execution, if the proposition involved the acquirement of existing properties and the linking and grouping together of towns previously served by unit generation.

The operation of such a property necessitates an unusual quality of supervision, because the properties are not under the eye of the management to the extent that single large plants and distributing systems are, and the employees are more removed from the direct influence of the management.

The logical method of estimating a system for suburban gas distribution by high pressure mains is to consider the ultimate territory to be served in its various aspect as a whole. This can be arrived at best by considering the towns which ultimately may be a part of the system, even though there may be a number of other companies operating in the territory; as, to conceive a project, it is necessary generally to disregard the existing conditions.

After determining the towns which may be served by a general system, the buildings in the various communities and in the suburban districts should be counted. Estimates, based on population, are usually arrived at by allowances for this, that, and the other condition, after assuming that so-and-so will happen or not happen; and, if so-and-so does happen, it may result in something else.

The logical method of determining the number of its consumers in a given district is to have the houses and other buildings counted and segregated into two or three classes; that is to say, houses of a value of $3,000, or less, and houses of a value of more than $3,000, and where it is intended that commercial lighting shall be done, a separate segregation of the number of stores should be made, and one classification of other buildings should include churches, public buildings, schools, etc.

There should be considered the ultimate development of the territory, based on prediction of what the conditions will be in 10 years. This can be arrived at in a number of ways, but the best method is to take the number of acres of tillable land tributary to a certain town and consider the probable ultimate development of the area; that is to say, to consider whether it will be divided into small ranches, large ranches, towns, cities, etc, and where, as in Southern California, we have horticultural and agricultural development of high degree, consider how many acres of the highest class, orange groves, walnut groves, etc., have been developed to produce a certain sized town, and then next to consider how many acres may be developed to the highest form from some of the lower classifications, and then to determine what sized town will be produced thereby.

The relation of the size of the town of the inferior classes of farm development, should then be next considered, and the two will result in a basis for predicting what the ultimate size of the town will be, based on the ultimate development of the contributory factors.

Other things may have to be considered, as the development of a seaport, the building of new lines of railroad, to what extent the town is dependent upon the adjacent farming developments, and the result from its being suburban to some large community. After these various factors have been studied and determined, the number of gas meters in service in 1920 should be assumed as being 90 per cent. of all the buildings.

After determining the number of meters probable in the territory to be served by 1920, a basis of $100 per meter should be used to determine the capitalization required by the company. In forming a company to serve a given territory, it is desirable to have a certain fixed relation between the various classes of capitalization, $150 per meter being the capital value of a gas property, the proportion of capital which represents the actual physical value of the property should not exceed 80 per cent. thereof, the remaining 20 per cent. representing intangible assets. This relation will be referred to subsequently in this paper.

In view of the new-thought movement, which is so seriously and vitally affecting public service corporations, it seems desirable that the corporations should receive its charter from the State in which it is operating, to the end that, if conditions work a hardship under these circumstances, that much sooner will the conditions be corrected.

There should be a straight line drawn between the securities which are sold for the purpose of raising money for the corporate needs of a company and those securities which are taken and held, either for controlling purposes or as compensation for development and management. An excellent way to secure the effecting of such a plan is to arrange to escrow the stock to be sold with a trustee, under the terms of an agreement providing for the issuance of the stock under certain conditions.

After all of the foregoing has been considered and determined, the next matter to undertake is to consider what arrangement would be made to serve the territory in the event that there were no gas plants now operating. Then consider and determine what arrangement would be made to serve the territory in the event that there were no gas plants operating in 1920.

After these two things have been determined, co-relate the two so that there will be a minimum loss in discarding existing plants.

After determining the plant situation in 1920, the high pressure trunk line should be laid out with an idea of carrying the load at 40 pounds pressure, based on the amount of business in 1920. The next problem involved is to fit the existing manufacturing plants into the trunk line system. If the plan is well worked out, logically designed, and sound, economical and engineering reasoning used, the problem of securing capital for the carrying out of the plan would be solved, if people were eager to bid for an opportunity to participate in 6 per cent. regulated public service corporation securities.

The Company with which the writer is connected (Southern Counties Gas Company, of California), has approximately 6,000 meters served by high pressure trunk lines, and high and low pressure distributing systems. The high pressure trunk lines are at present operating under a pressure of 20 pounds, and at higher pressure in some few instances.

We have brought much suburban territory in touch with transmission lines, from which laterals have been run into sparsely settled districts, making it possible to supply small isolated communities, which would not have had gas service otherwise for a long time to come. The compression of gas has made possible its delivery to remote sections, with comparatively small mains, making it possible to consider favorably extensions which have heretofore been impracticable.

This class of distribution, however, represents comparatively high maintenance and operating cost, as the meter reading and collection of delinquent bills under such conditions involve considerable expense for transportation, and loss of employees' time in transit.

It is our practice to use only 1,500 pounds, test-line, pipe on 2 inch, and larger, and we specify that the couplings should be hand set at the factory.

In laying these mains we grade a ditch with almost as much care as though we were laying low pressure mains. At the time of laying, the couplings are unscrewed and liberally coated with red lead, then reversed, and in practically 70 per cent. of the connections we find we are able to utilize all of the threads on the pipe, thus making our connections good from a frictional as well as a mechanical standpoint. We have a large, portable air compressor with which we fill the mains with air up to 100 pounds pressure. Each joint is then carefully tested with soapsuds, and we have reason to believe that our lines are as well laid as possible.

We insert expansion joints in the line at various points, such as river crossings, corners at the end of long sweeps, etc., and also provide the line liberally with valves. Our expansion joints and valves are set in concrete boxes, with cast iron manhole covers, similar in design to those used in conduit work in cities, but smaller in size.

Suburban gas distribution is growing in importance each year, especially in Southern California, where the trend seems to be toward 10 acre ranches. In our southern division, supplying the cities of Santa Ana, Anaheim, Orange and Fullerton, we have a generating plant at Santa Ana, serving the entire district.

The high pressure trunk line is 4 inches in diameter and 12 miles long, and carries gas under a pressure varying from 10 to 20 pounds. This territory included a population of about 25,000 people, formerly supplied from four plants. This particular group of towns offers an excellent opportunity for this class of work, and it might be termed "Intensive Suburban Distribution."

From Santa Ana, with a population of 10,000, it is a distance of 3 miles to Orange, with a population of 5,000; from Orange it is a distance of 4 miles to Anaheim, with a population of 5,500; from Anaheim it is a distance of 3 miles to Fullerton, with a population of 3,500; while along the road traversed by the high pressure trunk line, there about 20 houses to the mile.

The gas for this section is manufactured at Santa Ana and compressed through receiving tanks to a high pressure trunk line, which is 4 inches in diameter the entire distance. The eventual plan of this particular group, is to extend the line a further distance of 13 miles to Whittier. The high pressure line as it passes through Santa Ana, is utilized to serve certain sections by district regulators.

At the plants which have been shut down the holders are kept full and held in reserve in case of interruption of service furnished by the high pressure trunk line, small compressor plants being maintained to utilize the gas stored.

In all high pressure work the installation must be made with the greatest care and with the utmost precaution, as small breaks, such as a plowed up service, may result in a great deal of loss of gas before the pressure can be shut off. The development of high pressure gas distribution has resulted in operating economies, and in securing better pressure conditions, and has enabled us to serve customers not otherwise available.

Our Investigating Department of the San Diego Consolidated Gas and Electric Company.

[Prepared by Mr. C. H. Hunt, for the Twentieth Meeting, Pacific Coast Gas Association.]

The investigating department of the public service corporation of to-day is not the chamber of horrors it was some three years ago. As the public have rights which we gladly respect, the policy of this department is to shape its attitude, as regards the public, so that the patron is bound to feel that, by simply calling attention to a real or imaginary wrong, it will receive prompt attention. We feel that the patron making a complaint is honest in the belief that a wrong exists which, from his point of view, needs immediate attention from this department; we attempt to give that complaint immediate attention, and full and complete investigation is had. I cannot bring myself to think that, even though the claim be an insignificant one, it can be passed without a full and complete investigation, for it is the little things that are noticed in corporations and, odd as it may seem, I do not believe that the general public intends to impose upon this department.

Now, as an investigator, I do not take the position that I am at liberty to make a patron feel as if he or she were upon the witness stand when stating his or her complaint, and that I, or the investigator, were taking him through a strenuous cross-examination, in the effort to have him admit that his claim to poor service, or even a disputed account or the like, was not well based.

I believe, too, that the matter of the mode of transmission of either gas or electricity for their burners and lamps should be fully understood by them, and I have always taken pleasure in making full and complete explanations whenever a patron showed an interest and made inquiry in reference thereto.

I feel, too, that the matter of a patron being able to read his own meter is of importance, and that the mechanism of a meter should not be shrouded in mystery; but, quite the contrary. A patron should be given full insight into the same, and I, for one, attempt to instruct them in meter reading. For that purpose I have prepared devices whereby they may take up the study of meter reading, and so far have been successful, for we now among our patrons find many housewives who, as consumers, are able to read their gas and electric meters. Heretofore a meter was looked upon as a puzzle, made only for the purpose of defrauding the public, and not for the purpose of showing its consumption. Along this line—that is, for instruction of the general public—we have installed in the investigating department of this Company, not alone for our own edification, but, as I have said, for the benefit of the public, the following equipment:

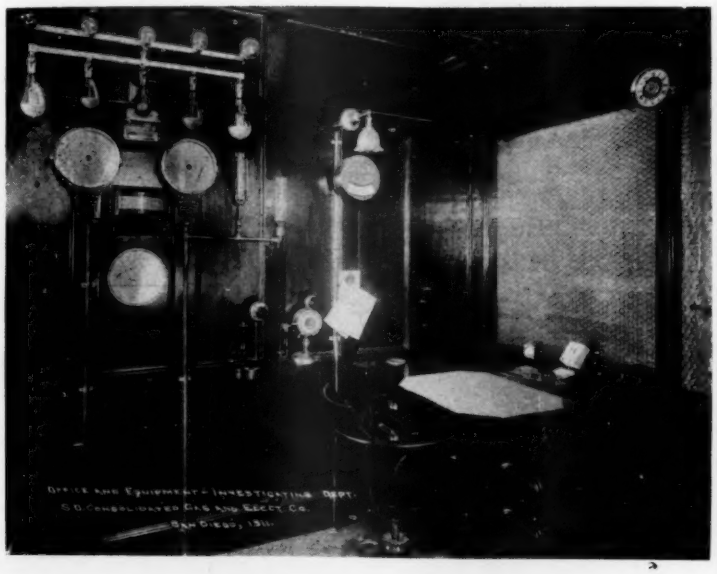
A gas meter, with glass front-and-back, showing its complete mechanism, to which is attached one ordinary, open gas jet, and a mantle burner, Between the meter and the burner are gauges showing the consumption per hour, thus enabling us to show the customer the difference in the amount of gas consumed on these burners, and it is surprising to know that many disputed bills have been settled satisfactorily by this comparison.

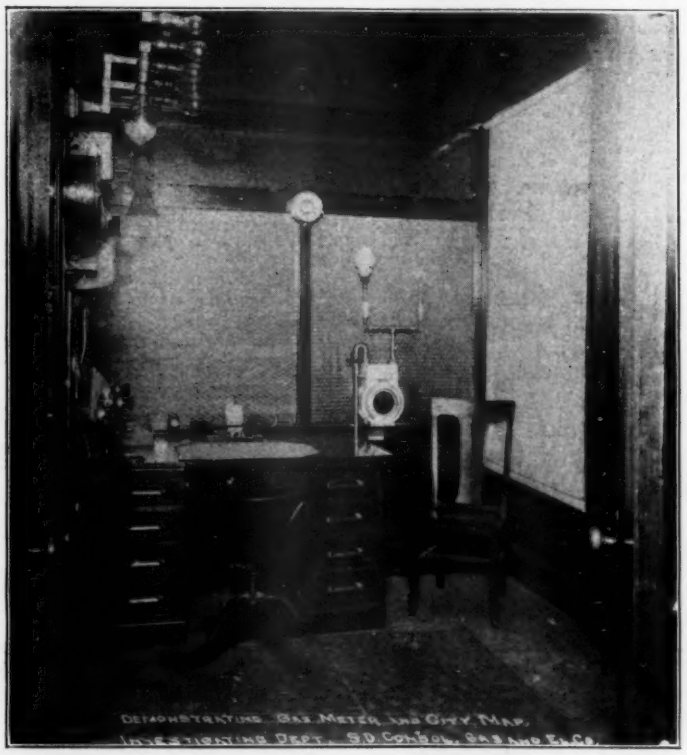
We have also a Jones' jet photometer, showing the candle power of our gas; also, a water column pressure gauge which, working in conjunction with the recording prssure gauge, shows our gas pressure. We also have an electric-recording voltmeter; a regular type of electric meter, with glass front, showing mechanism of same.

To bring about comparisons in electric lighting, we have bars upon which are placed electric lights, the upper bar showing the various sizes of carbon lamps, the bar underneath showing the various sizes of mazda lamps. To this we have connected a watt-indicating meter, with a special dial, which indicates the amount of current consumed per hour on any of the lamps displayed on the bars spoken of. This special dial is based upon the rate upon which we sell our electric current; namely, 10 cents per kilowatt hour.

Along these lines, I should like to say that this device, as well as the demonstrating gas meter, has done as much or more to adjust claims of dissatisfied customers than all the talker or writer might do, for, being self-explanatory, it demonstrates to the customer what words have failed to do. The pictures submitted show views of the interior of this office.

I also submit the appended copy of our investigating order, the body of which order covers all possible complaints, as well as the mode of investigating the same; by whom, at what time, time consumed, and various other important items. At the bottom of this order you will note report of workmen, showing time of receipt of





order by him, when executed, and when returned to this office. On the reverse side is detailed report, not only showing the conditions as he found them, but after the equipment and appliances of the house together with any suggestions which he might make tending to better the service. A report of this kind returned to the office puts us in direct touch with the facts concerning the complaint, and at the same time aid in our load record. After installing this system of investigation, and giving the same due and thorough trial, our complaints have decreased very materially, as shown by the following statement: In the last two years the complaints have fallen off from 5 per cent. down to ¼ of 1 per cent. of our customers; and this, too, notwithstanding the fact that our increase on meter sets has been from 6,000 to 12,000.

Form 117.

A. SAN DIEGO CONSOLIDATED GAS & ELECTRIC COMPANY

GAS

No. 22764 INVESTIGATION ORDER

Date.....191

Name .....

Address .....

Meter Number .....

Test Meter .....

Re-read Meter .....

No Gas .....

Poor Pressure .....

Place Rec. Pres. Gauge .....

Adjust Range .....*W. H.*.....*Lights*.....

Trace Piping .....

Misc .....

.....

This investigation is being made at { Verbal / Written / Phone } *request of* 191

Investigate promptly and report fully in blank spaces hereon, to the undersigned. *By* .....

REPORT

Meter No .....

Index .....

Remarks .....

.....

Received .....A.M. / .....P.M. *Arrived* .....A.M. / .....P.M. *Departed* .....A.M. / .....P.M.

Date completed 191

By .....*Meterman*

Fill out report on back.

REPORT (back).

Is the pressure O.K.? .....

Is piping gas-tight? .....

Are meter connections O.K.? .....

Location of leak, if any? .....

.....

Rate of leak? .....

No. of gas jets used? .....

What kind of burners? .....

Condition of burners? .....

.....

Has consumer a gas range? .....

What kind? .....

Condition? .....

Has consumer a hot plate? .....

What kind? .....

Condition? .....

Has consumer a gas water heater? .....

What kind? .....

Condition? .....

Has consumer a gas heating stove? .....

What kind? .....

Condition? .....

Other appliances in use? .....

Is there any unnecessary waste of gas; if so, where? .....

.....

What can you suggest to better the service and avoid the waste of gas?

.....

.....

Form 117.

B. SAN DIEGO CONSOLIDATED GAS & ELECTRIC COMPANY

GAS

No. 22764 INVESTIGATION ORDER

Date 191

Name .....

Address .....

Meter Number .....

Test Meter .....

Re-read Meter .....

No Gas .....

Poor Pressure .....

Place Rec. Pres. Gauge .....

Adjust Range .....*W. H.*.....*Lights*.....

Trace Piping .....

Misc .....

.....

This investigation is being made at { Verbal / Written / Phone } *request of* 191

Investigate promptly and report fully in blank spaces hereon, to the undersigned. *By* .....

REPORT.

Meter Number .....
Index .....
Remarks .....
.....
Received .....A.M. .....P.M. *Arrived* .....A.M. .....P.M. *Departed* .....A.M. .....P.M.
Date Completed 191
By .....*Meterman*

It must be borne in mind that in this department we have to deal with complaints of high bills, poor service, gas leaks, setting or removing meters, re-reading meters, opening and closing accounts, testing meters and answering by letter of every complaint entered in his office after the order which has been issued thereupon is returned tto the writer. Now, this letter explains to the customer just what the conditions were as reported. It is not a stereotyped letter, but deals with each individual complaint and is signed in person by the writer.

In order to meet the demands, and take care of the orders that are entered in this office, we have a force of day men as well as night men. The night force on the electric side consists of one night man mounted on a motor cycle and one with an automobile. For the gas we have two night men with steam automobile, equipped with all necessary tools, as well as 100 feet of hose, which can be utilized in case the service line is choked. These men also carry extra meters. Their office is equipped with a complete telephone system, thus putting the public in touch with them at all times. These men make their report before going off duty in the morning, thus putting the office in touch with what transpired during the night.

In conclusion I wish to say that it is the effort of this department to give the public not only satisfaction but perfect service; and that it is not only the method and manner in which this is handled, and what is said, as much as the way in which it is said, and the courteous treatment that our patrons receive that are the primary causes of our success—if we are successful—our precept being that courtesy is a cheap commodity, and that we attempt to be men among men.

Some Routine Business, Pacific Coast Gas Association.

The appended matters have to do with certain business matters of a routine nature transacted at the Oakland meeting of the Pacific Coast Gas Association, September, 1911:

REPORT OF BOARD OF DIRECTORS.

OAKLAND, CAL., Sept. 18, 1911.

The annual meeting of the Board of Directors was held at the office of President Leach, 13th and Clay streets, Oakland, and the same was called to order at 8:30 P.M. Those present were: Messrs. Leach, Baurhyte, Jones and Adams. The Chair was occupied by President Leach.

The report of the Secretary and Treasurer was read; and, on motion, duly seconded, it was approved.

The list of papers to be read before the convention, as shown in said report, was also duly approved, and it was the voice of the Directors that the list of applications for membership, both active and and associated, as shown in said Secretary's report, be duly recommended for election.

On motion, duly seconded, the following resolution was unanimously adopted:

"*Resolved*, That the 20th Annual Convention of the Pacific Coast Gas Association be held at San Diego, Cal., Septemder, 1912."

There being no further business, on motion, duly seconded, the meeting adjourned.

JOHN A. BRITTON, Secretary.

The following

LIST OF APPLICATIONS FOR MEMBERSHIP

was received and assented to:

Active.

W. J. Armstrong, Representative, Oakland (Cal.) Gas, Light and Heat Company.

C. B. Babcock, Coast Representative, General Gas Light Company, San Francisco.

A. U. Brandt, Supt. Elec. Dist., Oakland (Cal.) Gas, Light and Heat Company.

J. A. Britton, Jr., Asst. Gas Dept., Pacific Gas and Electric Company, San Francisco.

M. R. Brown, Com. Dept., Oakland (Cal.) Gas, Light and Heat Company.

S. S. Campbell, Com. Dept., Oakland (Cal.) Gas, Light and Heat Company.

R. Crossman, Asst. Gas Extension Dept., Oakland (Cal.) Gas, Light and Heat Company.

J. P. Davidson, Salesman, W. F. Boardman Co., San Francisco.

D. H. Foote, Secy., Pacific Gas and Elec. Company, San Francisco.

F. Gilbert. Commercial Department, Oakland, Cal.; Gas, Light and Heat Company.

T. H. Hess, Manager Home Gas Company, Porterville, Cal.

F. A. Kales, Draftsman, Oakland, Cal., Light and Heat Company.

Geo. F. Maddock, Engineer, 2515 College Avenue, Berkeley, Cal.

A. P. Pratt, Agent, Oakland,Gas, Light and Heat Company, Berkley, Cal.

R. C. Powell, Superintendent Electric District, Oakland, Cal., Gas, Light and Heat Company.

C. A. Rice, Gas Department, Pacific Gas and Electric Company, Chico, Cal.

W. W. Shuhaw, Chief Clerk, Pacific Gas and Electric Company, San Leandro, Cal.

H. B. Squires, San Francisco, Cal.

J. W. Terney, Foreman, Gas Meter Department, Oakland (Cal.) Gas, Light and Heat Company.

P. C. Wickersham, Commercial Department, Oakland (Cal.) Gas, Light and Heat Company.

Jas H. Wise, Assistant General Manager, Pacific Gas and Electric Company, San Francisco.

W. W. S. Butler, General Manager, Western States Gas and Electric Company, Stockton, Cal.

Don A. Tregidgo, Assistant Distrib. Department, San Francisco (Cal.) Gas and Electric Company.

F. F. Barbour, Assistant to President, Pacific Gas and Electric Company, San Francisco.

F. H. Walker, Agent, Walker Stove and Range Company, San Francisco, Cal.

A. Emory Wishon, Assistant General Manager, San Joaquin Light and Power Corporation, Bakersfield, Cal.

H. A. Lemmon, Superintendent, Carson City (Nev.) Coal Gas Company.

M. G. Hall, Manager, Pacific Gas and Electric Company, Santa Rosa, Cal.

J. H. Hill, California Manager, Pittsburgh Meter Company, San Francisco, Cal.

E. Letts Oliver, San Francisco, Cal.

A. F. Derrick, Foreman, Oakland (Cal.) Gas, Light and Heat Company.

F. J. Schaffer, Assistant Superintendent, Southern California Gas Company, Los Angeles, Cal.

E. A. Gimper, Superintendent, Bakersfield (Cal.) Gas Company.

A. C. Davis, San Francisco, Cal.

R. H. Burdick, Assistant Superintendent, San Diego (Cal.) Consolidated Gas and Electric Company.

Jos. S. Worthington, Superintendent, Municipal Gas Works, Santa Clara, Cal.

C. M. Crow, Div. Mgr., Pacific Light and Power Company, San Bernardino, Cal.

E. C. Demming, Supt. Gas Dist., Sacramento (Cal.) Electric, Gas and Railway Company.

H. H. Sprague, President, Sprague Meter Co., Bridgeport, Conn.

Associate.

Holbrook, Merrill & Stetson, San Francisco, Cal.

F. P. Woy, Manager, Albuquerque (N. M.) Gas, Electric Light and Power Company.

G. W. Ackerman, Salesman, Walker Stove and Range Company, San Francisco, Cal.

Reliable Eng. & Mfg. Co., Pasadena, Cal.

Oregon Power Company, Eugene, Ore.

McGeorge & Cooper Mfg. Co., San Francisco, Cal.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

The following is the last of the Report of the Committee on President's Address.[1]

PACIFIC COAST GAS ASSOCIATION,

OAKLAND, CAL., September 20, 1911.

Mr. President—Your Committee on President's Address begs leave to report as follows: We are particularly pleased to commend the

1. For text of address, see *anti*, p. 209.

President, and to voice what we believe to be the sentiment of the convention, by referring in terms of praise to the tone of industrial progressiveness which so notably characterizes the paper that was read yesterday by the presiding officer. It is unmistakably true tha the attitude of society toward the employer and the public service corporation has gone through a remarkable change within the past few years. It has come to be realized that industry bears a peculiar relationship to society which was never before understood, and that the public nature of the corporation alters the old ideas concerning the relationship between employer and employe. We believe that the gas men of the Coast should give their profound attention to the problems involved in the Employers' Liability Law; and we heartily applaud the liberal, progressive, and humanitarian attitude taken by the President in commending the terms of the California law as strengthened by the proposed constitutional amendment.

From a purely business point of view, the suggested criticism of the new tax law of the State is perhaps the most important part of the address. The subject of taxation is one that lies beyond the ken of the mere layman, except in its broader aspects. We feel that the issues concerned in the apportioning of the tax levy are involved, and that a mere statement of the fact that the gas and electric companies have been assessed for 10 per cent. of the total levy throws insufficient light upon the equity of the situation. Permit us to say that we should have preferred a more specific and detailed statement of the facts. It is certainly a matter for serious consideration and serious action on our part, if it is true that the industry which we represent is taxed beyond its due, just proportion.

We are glad to note the tone of optimism that promises so much for the future of the business in its various branches, and which gives us so bright an outlook upon the labor situation.

Again, let us commend the liberality and breadth of view which mark a very able address.

Respectfully submitted,

R. P. Valentine,
J. M. Berkley,
R. Leo Vandernaillen, } Committee.

Report of Committee on Nominations.

The following is the text of the Report of the Committee on Nominations, which report was in due course accepted and the gentlemen named therein were elected as designated:

Oakland, Cal., Sept. 20, 1911.

To the President and Members of the Pacific Coast Gas Association —Your Nominating Committee respectfully submits the following named gentlemen to carry on the destinies of the Association for the current fiscal year, 1911-1912.

For President.—Wm. Baurhyte, Los Angeles, Cal.
" *Vice-President.*—Henry E. Adams, Stockton, Cal.
" *Secretary.*—John A. Britton, San Francisco, Cal.
" *Asst. Secretary.*—Henry Bostwick, San Francisco, Cal.
" *Board of Directors.*—Henry C. Keys, Sacramento; H. H. Jones, San Diego; C. S. Vance, Los Angeles; C. F. Stamps, Jr., Los Angeles; Geo. C. Holberton, San Francisco; R. J. Thompson, San Francisco; S. Waldo Coleman, Santa Cruz.

Respectfully submitted, C. S. Vance,
C. L. Corey,
Sherwood Grover, } Committee.

Report of Librarian.

The report of the Librarian (Mr. E. C. Jones) to the Pacific Coast Gas Association is as follows:

Your library is steadily growing in size and popularity. During the past year over 100 volumes have been placed in circulation, and the present location of your library and the facility with which books may be obtained have increased its use for reference purposes.

The library now consists of 859 books, 137 having been added during the past year by purchase and gift.

Your Librarian wishes to acknowledge at this time the following donations of books to the library:

American Gas Institute; Vol. 5 of "Proceedings," 1910.
"History Ohio Gas Light Association, and Questions from Question Box, with "Supplements" of 1905 and 1906.
National Commercial Gas Association, "Proceedings," 1910.
Iowa District Gas Association, 1905 to 1910, inclusive.
Reports, "Board of Gas and Electric Light Commissioners," Mass., 2 Vols., 1909 and 1910.

Also various publications of the Department of the Interior, Bureau of Mines.

The library regularly receives 7 periodicals. These periodicals are bound in a uniform style of binding and added to the library, and may be used by members either before or after binding. Their titles are:

The American Gas Light Journal.
"Progressive Age,"
"The Gas Industry,"
"The Journal of Electricity, Power and Gas,"
"The Gas World," London, England.
"The Journal of Gas Lighting, Water Supply and Sanitary Improvement," London, England.
"Pacific Gas and Electric Magazine."

The condition of the Library Fund September 11, 1911, was as follows:

Cash on hand, September 10, 1911	$388.18
Expended during the year	123.01
On hand, September 11, 1911	$265.17

Your library is insured against fire in the Westchester Fire Insurance Company. There are two policies, one for $550, expiring January 15th, 1912; the other for $450, expiring September 23, 1912.

The library is supported entirely by donations, there being no provision for using money from the general fund of the Association; and the necessity is urged upon the members of donating, from time to time, either sums of money or books for the upkeep and enlargement of the library.

Your library is on the mailing list of the principal publishers of scientific books throughout the world, and selections are made from these lists of publications for the purchase of books for the library. The selections have been made almost wholly on the judgment of your Librarian, and it is urged that members avail themselves of the privilege of suggesting the purchase of books which will be of interest and profit to them in the conduct of their business. This will give the Librarian an opportunity of broadening the usefulness of the library.

Respectfully submitted,
E. C. Jones, Librarian.

The Gas Meter.

[Prepared by Mr. W. M. Du Val, of San Francisco, for the Nineteenth Meeting, Pacific Coast Gas Association.]

I wish to begin by saying that I am indebted to Mr. William McDonald, of Albany, N. Y., for much of the data contained in this paper.

From the time James Murdock (1792) first manufactured gas for commercial, or, as "King" says, "For economical purposes," until about the year 1820, there was no way of ascertaining how much gas was used, except by counting the number of burners used and guessing at the amount each burner consumed per hour, or some other period.

This proved a very unsatisfactory way of selling gas, as the unscrupulous consumer always got the best of it, the honest one getting the worst; and it is a fact that, until some method of measuring gas was obtained, all attempts to sell gas commercially were financial failures. So those engaged in the manufacture and sale of gas soon realized the necessity of securing some instrument that would inform them how much was being used, and set themselves seriously to accomplish what must have seemed to them an exceedingly difficult task.

It is not the intention here to undertake to describe the mechanical details of these first attempts at meter making, as they are fully described in King's "Treatise on Coal Gas;" and, so far as wet meters are concerned, in a paper on "Station Meters," by Mr. Donald McDonald, of Albany, N. Y., read at the Congress of Gas Associations, June, 1904.

It may be said briefly, however, that, spurred on by the necessity for a measure of some kind, Samuel Clegg, early in 1815, made the first known attempt to construct a gas measuring machine. It was a crude attempt and would not work practically. His second attempt was made in December, 1815, and he then succeeded so far as to have his measure styled "The First Gas Meter." In 1817 and 1818,

(*Continued on page* 250.)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

A. M. CALLENDER & CO., - - Proprietors.

THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.
H. THURSTON OWENS, - Associate.

CHARLES H. WADELTON, Manager.

NEW YORK, MONDAY, OCTOBER 16, 1911.

[Official Notice.]

Sixth Meeting, American Gas Institute.

The Sixth Annual Meeting of the Institute will be held at St. Louis, Mo., on Wednesday, Thursday and Friday, October 18th–20th 1911.

The Headquarters will be in the Hotel Jefferson, and the meetings will be held in Memorial Hall, 19th and Locust streets.

The Committee on Arrangements has made preliminary plans for a banquet on Thursday evening, and an excursion on the river for Friday afternoon. The ladies will be entertained with an automobile ride and luncheon, Thursday noon, and a theater party on Thursday evening.

The Committee on Arrangements is composed as follows: C. L. Holman, Chairman; D. R. Russell, August Court, C. H. Quackenbush, A. C. Einstein, T. D. Miller, John Dell, C. H. Dickey, R. B. Hatton, R. A. Walsh, E. A. Downey, E. H. Boehnken.

Hotel Rates.

Hotel.	Single Room. Without Bath.	Single Room. With Bath.	Double Room. Without Bath.	Double Room. With Bath.
Jefferson...	$1.50 day and up.	$2.50 day and up.	$2.50 day and up.	$3.00 day and up.
Southern...	$1.00 day and up.	$2.50 day and up.	$1.00 day and up.	$2.50 day and up.
Maryland..	$1.50 day.	$2.00 and $2.50 day.	$2.00 and $2.50 day.	$3, $3.50 and $4 day.
American..		$1.50 day and up.		$2.50 day and up.
Planters....	$1.50 and $2.00 day.	$2.50 day.	$1.50 day and up.	$2.00 day and up.
Marquette..	$1.00 and $1.50 day.	$2, $3 and $3.50.	$1 each.	$1.50 each.

Hotel.	Rooms with 2 Beds, Without Bath. 2 People.	Rooms with 2 Beds, Without Bath. 3 or 4 People.	Rooms with 2 Beds. With Bath. 2 People.	Rooms with 2 Beds. With Bath. More than 2.
Maryland..	$3.00 day.	$4.00 day.	$4.00 day.	$1 each for all over two.

Transportation.

Railroad Rates.—It will be impossible to secure convention rates on the certificate plan for this meeting, as the Passenger Associations have raised the minimum attendance for securing such rates to 1,000. But in many cases excursion tickets and mileage books can be used to advantage.

The Chairman of the Technical Committee announces the following papers to be read at the meeting:

"Some Principles of Condensation, with Special Reference to Water Gas," by L. E. Worthing, Detroit, Mich.

"Notes on the Development of a By-Product Coke Oven Gas Plant," by W. S. Blauvelt, Semet-Solvay Company, Detroit, Mich.

"Operation of Verticals at Providence, R. I.," by Carroll Miller, Providence, R. I.

"Report on Verticals at Manchester, N. H.," by W. G. Africa, Manchester, N. H.

"The Turbo-Blower," by Dr. L. C. Lowenstein.

"Production and Market for Ammonia Products:"

1. "General Process of Manufacture of Sulphate." by C. G. Atwater.
2. "Production and Marketing of Ammonia," by W. N. McIlravy.
3. "Details of Manufacture of Sulphate," by H. Fisher.
4. Bibliography," by A. B. Way.

"Tar Distillation and Market for Its By-Products," by Alan D. Whittaker, Atlanta, Ga.

"Actual Leakage in Unaccounted for Gas," by J. D. von Maur, St. Louis, Mo.

"District Holders and Their Place in a Distribution System," by R. M. Griswold, Denver, Col.

"Flow of Gas in Mains," by J. W. Battin, Detroit, Mich.

"U. S. Government Report on Electrolysis," by S. W. Stratton, Bureau of Standards, Washington, D. C.

"Pacific Coast Conditions," by John A. Britton, San Francisco, Cal.

"A Survey of American Gas Photometry," by C. O. Bond, Philadelphia, Pa.

"Cost and Results Obtained from Automobile Delivery," by L. R. Dutton, Wyncote, Pa.

At a regular meeting of the Board of Directors, held August 19th, 1911, the following gentlemen were elected as the Nominating Committee: C. H. Nettleton. Chairman; Jas. H. Jourdan, W. H. Gartley, James Ferrier and J. H. Eustace.

In case of inability to serve, the following gentlemen were named as alternatives: J. A. Britton, T. C. Jones, C. M. Cohn, J. D. von Maur and H. M. Moore. A. B. Beadle, Secretary.

[Official Notice.]

Seventh Annual Convention, National Commercial Gas Association.

Considerable interest is being noted throughout the entire gas industry over the coming Convention and Exhibition of gas appliances of the National Commercial Gas Association, to be held in Denver, Col., October 23 to 28. From the standpoint of the manufacturers the exhibition will be a complete success, as their hearty co-operation and early contracting of spaces have now assured every space in the Hall being taken.

The attendance is expected to eclipse any former meeting of gas men ever held. The Association is now recognized throughout the country, and has demonstrated upon former occasions its ability to offer every facility for bringing the gas men from all parts of the country together, not only to meet the manufacturers, but to meet on a common ground and discuss the vital questions which are of paramount importance to the industry. Assurances from all sections of the country leave no doubt as to the attendance, which will probably establish a new record for conventions of gas men.

The membership of the Association is steadily growing in a most satisfactory manner, and, with the advantages offered to members through its monthly "Bulletin," its educational course for salesmen, formation of company sections and standardizing handbooks of appliances, should be enjoyed by all. No gas man should hesitate an instant, but join at once.

Paper Programme.—The list of papers has been carefully selected this year, with a view to offering as wide a range of subjects as possible, and the discussions should prove most interesting and instructive:

"An Equitable Sliding Scale for the Sale of Gas." E. L. Callahan, New Business Manager, H. M. Byllesby & Co., Chicago.

"Up-to-Date Advertising Methods." T. R. Elcock, Jr., Advertising Manager, the U. G. I. Co., Philadelphia, Pa.

"Illuminating Engineering and Its Application to the Gas Industry." E. L. Elliott, Editor, "Illuminating Engineer," New York City.

"Exhibit and Description of Model Glass Gas Works." A. F. Traver, Supt. Gas Dept., Denver (Col.) Gas and Electric Co.

"The Modern Gas Fixture." Chas. Ummach, Sec., R. Williamson Co., Chicago, Ills.

"Some Notions of a Manufacturer." Robert K. Clark, George M. Clark Stove Co., Chicago, Ills.

"Increased Efficiency in Scientific Office Accounting." P. R. Jones, Auditor, Doherty Operating Co., New York City.

"Practical Demonstration Work." Mrs. Anna A. Carroll, Demonstrator, the U. G. I. Co., Philadelphia, Pa.

"Manufacture of Gas Mantles from Artificial Fibers." S. Gulbrandsen, Research Chemist, Welsbach Company, Gloucester, N. J.

"Reciprocity: A Co-operative System for Compensation of Employees of Corporations." J. B. Douglas, Claim Agent, the U. G. I. Company, Philadelphia, Pa.

"Relative Cost and Efficiency of Gas, Electric and Gasoline Lighting." W. M. Blinks, General Gas Light Co., Kalamazoo, Mich.

"Steel." Editor not yet selected.

The entertainment features will, without doubt, prove too alluring to resist. The Committee has indeed reason to feel proud of the novel chain of features which will be presented to those attending the meeting. Besides the usual theater parties, auto rides through the city and suburbs, "smoker" for men, luncheons and receptions for the ladies, of particular interest will be the 3 day trip (following the closing of the business session) through the mountains, including a specially arranged cowboy, chuck-wagon dinner in the "Garden of the Gods," followed by a real rough-riding exhibition.

Colorado offers every facility for a real holiday trip, embracing features which could be arranged in no other locality, and the atmosphere of the "Far West" is indeed a strong drawing card and should be given serious consideration. You cannot afford to lose such an opportunity, which may never occur again, not only from a business standpoint and the value of such a meeting, but also for the benefit such a trip will be to you.

Special trains have been arranged for by the Association to leave Chicago, October 22d, at 5 P.M., arriving in Denver Monday evening, 7:30; leaving St. Louis, October 21st, at 2:15 P.M., arriving at Denver October 22d, at 5:35 P.M. It has not been possible to secure reduced rates, all the passenger associations having declined to make concessions, therefore, the full fare will be charged. The expense of the trip will, of course, be gauged by the distance members must travel and the hotels selected. Full details of hotel accommodations,

etc., will appear in the September issue of the monthly "Bulletin" of the Association, and any gas man not a member of the Association may procure a copy of same by addressing the Secretary, Mr. Louis Stotz, at 29 West 39th street, New York. Our Colorado friends extend to you a cordial invitation to be present during the week of the Convention, and assure you of a most interesting trip.

BRIEFLY TOLD.

ANOTHER GAS ENGINEERING COURSE, UNIVERSITY OF CALIFORNIA.—Through the unfortunate illness (both sudden and severe) of the correspondent who was to have advised us by telegraph of the proceedings of the recent Oakland convention of the Pacific Coast Gas Association, we were prevented from printing a summary of the proceedings. We have since learned that the meeting was a record one in the Association's history in more ways than one. Perhaps, though, the most noteworthy action taken had to do with the founding of a fund by means of which endowment is assumed for the keeping up, in the University of California, of a course of study under which will be conferred annually the decree of Gas Engineer. This thought was first proposed by Secretary John A. Britton, something over a year ago, and its happy culmination, while bespeaking the activity for solid advance which animates the gas men of the Coast as a body, adds greater evidence to the perspicacity of the gentleman to whose initial efforts the Coast Association really owes its beginning.

SEVENTH ANNUAL MEETING, EMPIRE STATE GAS AND ELECTRIC ASSOCIATION.—The Seventh Annual Meeting of the Empire State Gas and Electric Association was held in the United Engineering Societies' Building, New York city, Friday, October 6th. There were about 55 present. In the absence of the President, Mr. M. J. Brayton, of Utica, who was prevented from being present on account of very important business, Mr. R. M. Searle, of Rochester, the First Vice-President, presided. During the morning session the routine business, including the reports from officers and committees, was taken up and disposed of. The Committe on Arrangements suggested the following schedule of meetings and subjects:

Month.	Place.	Subject.
November..	Syracuse.	Street Lighting.
January	Buffalo	Railroad Crossings.
February	Poughkeepsie	Accounting.
March-April	Fulton	New Business.
May	Ithaca.	Joint Use of Poles and Suburban Distribution.
June-July..	Rochester	Use of Auto Trucks.

Undoubtedly this programme will be carried out during the coming year. The report of the Taxation Committee brought out an interesting discussion on this subject. The Chairman outlined a method of taxation and stated a number of arguments for it. He was requested to prepare his discussion of this subject in such form that it could be printed and distributed to the members. After the reports had been received, Mr. Hutchings, of the Rochester Railway and Light Company, presented some interesting figures in regard to the new Stanley electric range, and a very interesting discussion ensued which was taken part in both by the representatives of the electric companies and the representatives of the gas companies as well. The delegates lunched at the Engineers' Club at 1 P.M., after which the meeting reconvened, starting with some further discussion in regard to the Stanley range. The operation of this range was explained and estimates were presented of the proper price which could be charged by the companies for its operation. Mr. Searle had been requested to discuss the extent to which public service corporations should enter into civic relations. His remarks were extemporaneous; but the members were so much interested in his account of what was done in Rochester, that he was requested to put them in such shape that they could be printed and distributed. The attention of the members was called to a recent decision by the United States Circuit Court, in the matter of the Des Moines (Ia.) Water Works, which was of considerable interest as taking up questions of valuation and return. The following officers were elected for the ensuing year after which the meeting adjourned:

President.—Mr. R. M. Searle.
First Vice-President.—Mr. Charles G. M. Thomas.
Second Vice-President.—Mr. J. C. DeLong.
Treasurer.—Mr. Stuart Wilder.
Secretary.—Mr. C. H. B. Chapin.

We are indebted to the attention of Mr. Chapin for courtesies rendered in connection with this meeting.

THE SOFIA INTERNATIONAL EXHIBITION.—Mr. P. Williams, President of the International Exhibition, which is to be held in Sofia, Bulgaria, June-July-August, 1912, writing from Sofia under date of October 1, thus informs us: "The Exhibition, under the Hon. Presidency of the Royal Minister of Commerce and Agriculture, will embrace all products of Industry, Commerce, Agriculture, Arts, Industries, Hygiene, Alimentation and Sports. This enterprise, which has obtained the protection of the Municipality and the Chamber of Commerce and Industry of Sofia, and takes place during the festival year, 1912, will draw a great number of visitors to the capital of Bulgaria. Full particulars may be had on application to the Organization Committee of the International Exhibition, 1912, No, 5 Alexander Place, Sofia, Bulgaria."

PRIZE WINNERS, N. C. G. A.—The National Commercial Gas Association membership prize winners have been announced as follows:

Prize to.		Members. New
Towns of over 50,000....	Henry O. Loebell, Spokane, Wash..	with 69
Towns under 50,000....	Roscoe Nettles, Tampa, Fla	with 24
Prize of $125 also given to.	Geo. E. Smith, Jersey City, N. J.	with 122

The campaign resulted in an increase of over 500 new members for the Association, the total on October 1st being 2,800. There are 720 members of the salesmanship course, 150 of whom are employees of the Consolidated Gas Company, of New York.

CURRENT MENTION—

MR. E. L. RIEHA, writing to us from Bluefield, W. Va., says: "* * * I am here at Bluefield putting on the finishing touches to the new gas plant, which will be, when completed, one of the first in the country for its size. There are 3 full depth benches of 6's and 1 empty arch, with a complete cast iron stage floor. The exhausters, condensers, scrubbers, purifiers, meter and governor have been designed large enough to take care of ¼ million cubic feet per diem. The gasholder has a storage capacity of 75,000 cubic feet. All connections are 10 inches in diameter, and each machine is provided with a bye-pass. Under the energetic and careful administration of Mr. L. Irving Pollett, General Manager of the Bluefield Gas and Power Company, 10 miles of main have been laid and nearly 400 homes and stores have subscribed for the use of gas which, according to present indications, will be turned on to the city about October 26th. Only those who are acquainted with the very uneven topography of Bluefield can appreciate the many difficulties which had to be overcome in order to secure the excellent system which is rapidly approaching completion. Another feature worth mentioning is the site of the plant, which consisted of two rock ledges, separated by a valley, which ledges were leveled off by the aid of 426 pounds dynamite, 60 per cent. nitroglycerine."

"B.," WRITING from Salem, Mass., under date of the 10th inst., says: "The high pressure line between Pawtucket and Woonsocket, R. I., is finished. It runs through 16 miles of territory, is 6 inches in diameter and carries 6 pounds pressure. It is intended to yield a full supply for the Woonsocket district, and the old plant at that point will be shut down. Mr. R. B. Clark, whose careful administration of affairs at Woonsocket has resulted in much benefit to its owners, has installed a 12-foot station meter of the Maryland Meter Manufacturing Company's type, which apparatus was purchased from the Providence Gas Company.——Mr. T. I. Fenno, the up-to-date, successful new business manager, so well known in New England, has induced the management of the Peabody (Mass.) Theater to put up 6 outside Humphrey inverted arcs, replacing the now rather ancient method of encrusting the front of the structure with strips of incandescent electrics, or electric arcs of the swaying, buzzing sort. The gas arc also plays a major roll in the store lighting of Peabody, the beautiful—that is what they call it here; but the substantial reason therefor is beyond my ken. The electric output at Peabody is of the municipal type, or of the sort where the patrons thereof pay their monthly lighting bills at the end of each month; and, then, at the end of each year pay the total bill over again—in the shape of taxes. Mr. Fenno has also secured almost everything worth having in the lighting of Salem, Mass.——Mr. Joseph S. Brady, formerly on the selling staff of the Ruud Manufacturing Company, has resigned therefrom in order to take up with the Beler Automatic Water Heater Company, of Boston."

THE National Light and Power Company has been incorporated under the laws of New Jersey, with an initial capital stock of $500,000, as a holding and engineering company for gas, electric, street railway and hydro-electric properties. Its home office is in St. Louis, in fact in the quarters occupied by the National Light and Improvement Company, which syndicate is in process of dissolution. Its officers are: President, Mr. Judson H. Broughton; Treasurer and Secretary, Mr. W. C. Morehead. Mr. Broughton has been identified with the National Light and Improvement Company, as Secretary and Treasurer; President of the Citizens' Railway Company, Waco, Tex.; Vice-President and General Manager of the gas and electric properties at Waco and Fort Worth, Tex.; and also associated with the various other interests of the National Light and Improvement Company. Mr. W. C. Morehead has been an official in the subsidiary corporations of the National Light and Improvement Company, with headquarters at Waco and Fort Worth. He will now remove to St. Louis, there to take up the duties of Treasurer and Secretary to the new parent organization.

(*Continued from page* 247.)

Mr. John Malam greatly improved Clegg's meter, and it was again improved and made practical by Samuel Crosley, who became possessed of Clegg's patents in the years 1819 or 1820.

In 1820 the manufacture of wet gas meters was commenced and carried on as a regular business, and the sellers of gas gradually began their use. As an illustration of conditions, I quote the following, from the prospectus issued by the Edinburgh Oil Gas Light Company in 1824:

"The Directors of this Company beg leave to announce to the inhabitants of Edinburgh, that they will be ready, early in November next, to supply them with a Light, which, for brilliancy, cleanliness, and economy, had not yet been equalled.

"To suit the convenience of customers, they have resolved to supply them with meters, through which all the gas passes, and is registered with the greatest accuracy. By this plan the consumers can be charged for no more than the exact quantity consumed, whatever may be the number or description of lights employed by them. Neither are they limited in point of time, but may use the Light for a Longer or Shorter Period, as best suits them, and may Increase or Diminish the quantity at pleasure."

The first dry meter was patented by John Malam, in 1820, but it did not prove of any practical value; and, apparently, no further attempt was made to secure a a dry meter, until 1833, when an American, named Bogardus, of Baltimore, invented a dry meter which was patented in England by Mr. Bery. In 1836 this same Bogardus invented another machine intended to be a dry meter; but it apparently was never completed. An Englishman named Edge became the owner of Bogardus's patents, and very much improved the meter. He sold the rights to "The Dry Meter Company," London, who made an attempt to manufacture it for sale; but, apparently, they never succeeded in getting it on the market, as they abandoned its manufacture in a comparatively short time..

About this period Mr. Defries invented what has been known since as the 3-diaphragm, round meter, and eventually a large number of these meters were made and sold, as many of the companies on the Pacific Coast know. The diaphragm used in these meters was, and is still, known as the "Defries diaphragm," and up to the time of its invention and manufacture was altogether the best dry meter that had been made.

"King" says that it is not an exaggeration to say that Mr. W. Richards stands in the same relation to the dry meter that John Malam does to the wet. He made it a measuring instrument, insuring more regularity in its action and greater accuracy in its registration than any other that had been previously made. This meter, which is of the 2-diaphragm type, was invented by him, in conjunction with Mr. Croll, in 1844; and, with some modifications, is to day the meter most largely used for measuring gas. Before leaving the subject of wet meters, however, it should be noted that nothing has ever been evolved that would satisfactorily take its place for certain purposes. As a station meter at the gas works, as a philosophical instrument in the laboratory or photometer room, its place is practically undisputed. Made, as it is. entirely of metal, on the principle of a screw, and charged with water to such a height as to make the meter operative, it constitutes an exact measure, of which "King" truly says "May be placed among the most beautiful of mechanical inventions," and which, as he suggests, establishes an imperishable monument to the names of Samuel Clegg, John Malam, Samuel Crosley and William Parkinson. To these names must now be added the name of C. W. Hinman, of Boston.

Mr. Hinman's achievement was not so much in the line of evolving an original principle in measurement, as it was in the application of the principles which Clegg and Crosley had laid down, but he perfected these principles to such an extent as to constitute original invention along the line of utilizing to a greater extent than ever before the cubical contents of the casing of the meter, and by his arrangement of measuring partitions, a drum revolving at a periphery speed at a given loss of pressure not heretofore possible. This invention has been so successful as to make station meters built under his patents practically part of the standard specifications for gas works' meters in this country.

While the dry meter was invented by Richards and Caroll, and manufactured by them, yet it seems to have been Mr. Thomas Glover who improved, simplified and put on the market large numbers of this well-known dry gas meter, and it is known to-day as the "Glover Two-Diaphragm, Slide-Valve Meter." While many improvements in methods of construction have been made in the last 50 years, the mechanical principles of this meter have proved to be sound, and it stands as the best exemplification of a practical consumer's meter, and will probably so remain for a long time to come.

Especially in the past 40 years there have been many attempts made to produce measuring devices that would be superior, in some features at least, to or an improvement upon the 2-diaphragm, slide-valve meter, but the writer believes it can be safely said that no one has yet succeeded in accomplishing this; and it is the opinion of the writer, gathered from as many sources of knowledge on this subject as had been possible for him to reach, that the 2-diaphragm, slide-valve meter in a tin plate case will continue to be used for many years to come to measure the great volume of gas made and sold for domestic purposes.

Wet meters had been in use for some time on this side of the Atlantic, when Defries and Richards brought out their dry meters in England. Before relating briefly the story of the making of the first meters in this country, it may be said that, in a general way, the gas companies here found themselves confronted with the same problem that the English gas makers had encountered, in that it was necessary, in order to make a financial success of the business, to find some accurate means of determining the amount of gas used by each consumer. At first the gas companies here, as in England, attempted either to manufacture their own meters, or were more or less financially interested in the enterprise; but this relation was soon discontinued for the same good reasons that gas companies do not to-day engage in the business.

The relation between the gas company and its consumers has always been one that required diplomatic handling, and the manufacture of its own meters by the gas company was, and is, inadvisable, if for no other reason than the obvious one that the gas company's position is strengthened by being able to state that the meters by which the consumer's indebtedness to the company is ascertained, are made by disinterested parties, and the consumer may, therefore, be satisfied that the determination of the amount of gas consumed is correct. So, while a few of the early gas companies did, for a time, make some meters, the practice was soon discontinued, and the manufacture of meters was begun independently of the gas companies, and has so continued to the present time.

Not the least of the pleasures of reading history, or studying the record of the accomplishments of the past, is to find some reference to scenes or incidents which occurred in localities with which the reader is familiar, and particularly when such reference leads to places with which the reader is, or has been, intimately associated. Especially is this true when the reference brings back thoughts of home to him who has wandered far in search of success. So the writer knows he will be pardoned when he states that it was of peculiar interest to him, proud as he is of his Maryland birth and rearing, to find, as he browsed among the early records of gas making in this country, that the first practical meter makers in the United States were located in Baltimore. The names of the men who started this enterprise are almost forgotten, and the little shop in Concord street has long been closed, but inquiry on the writer's part developed the fact that meters bearing the badge of Slaney and Collier, or the Phoenix Meter Company, occasionally turn up in an odd lot sent in for repatrs.

Mr. H. C. Slaney contributed a paper to the meeting of the American Gas Light Association, in Washington in 1894, in which he gave some details of the early Baltimore meter makers. The first meter was made there, in 1832, by Mr. James Hill, and he was followed by Mr. John Rogers and by Mr. John M. Slaney, whose son afterward took in Chas. Collier as partner, and started the shop in Concord street, in 1848. This partnership was merged in 1850 into the Phoenix Meter Company, which was liquidated in 1859. In the meantime, and in fact shortly after meters had been made in Baltimore, meter making had begun in other Eastern cities: In 1836, in New York; in 1837, in Philadelphia; in 1849, in Boston; and in 1855, in Albany.

That there was considerable competition in the business even in this early day would be indicated by the following extract from a paper contributed by Mr. Donald McDonald of Albany, under the head of "Meters and Meter Makers," written for the semi-Centennial issue of the AMERICAN GAS LIGHT JOURNAL in the summer of 1909:

"In the first issue of this JOURNAL, of which this number is the semi-centenary, there appeared the advertisement of two firms of meter makers; those of Samuel Down, of New York, and of Code, Hopper & Gratz, of Philadelphia. In Mr. Down's advertisement appears the following paragraph which, read in the light of to-day, has

in it a considerable element of humor. After assuring ths prospective customers of the high quality of the meters which he is now producing, he continues with there words: "He deems it highly necessary to place gas light companies throughout the Union, British Provinces. South America and Cuba, on their guard against all parties who are industriously endeavoring to introduce to their notice patent dry gas meters constructed precisely in imitatiou of his, but with Chinese-like characteristics, not fully understanding the correct principles upon which they are made."

It is not within the scope of this paper to attempt to follow the fortunes of these early establishments, or of the men who were associated with them, except to note that these men have been among those best known in gas circles; and many of them have contributed in no small degree to the substantial progress of the gas business, both on the engineering and on the commercial side.

It seems proper that some reference should be made to the subject of prepayment meters, and in looking into this subject the writer finds that the first mention of such a device in the patent office was in 1889, when R. W. Brownhill secured 3 patents, in this country, on a device which he had previously patented in England and in Germany, and which he styled "An Apparatus for Vending Gas." He was quickly followed by Chas. Middlebrook, with further patents by Brownhill, and then by Sawer and Purves, W. Cowen, Damel, Orme, G. Carter, J. Hawkyard, J. Gowe, W. A. Thompson, W. N. Milsted, H. T. and J. G. Glover, and a few hundred others too numerous to mention, two of them being here in California.

The practical manufacture of prepayment meters began in England in 1891, and proved successful almost from the start. The writer is informed that the first prepayment meters sold in this country were made by the American Meter Company, under Parkinson's patents, in 1893; but did not prove very successful. Like all new things that succeed, the prepayment meter was a development, and out of the large number of men who tried to invent, or perfect, a device for the purpose, only a very few succeeded in making a prepayment meter, that, by its simplicity and durability, commended itself to the gas companies as a satisfactory article. After the first years of experiment, and with the discarding of innumerable devices that proved useless, two or three types of automatic, or as we call them, prepayment meters, came to be recognized as standard articles on the market; and the prepayment meter has proved to be a great help in obtaining consumers, especially among the middle and poorer clasees of people, and there are to day a very large number of such meters in use. In a considerable number of smaller manufacturing towns, particularly in New England, the local gas company has a greater number of prepayment customers than any other, and the writer notes, in the reports given in "Brown's Directory" for 1911, that in one New England city the number of meters in use is given as 2,170, of which only 3) are not of the prepayment type. The writer believes it can safely be said that the consumers supplied with prepayment meters are, as a class, the best satisfied of the gas companies' customers.

I will also refer to ihe "Complaint" meter, first made by the Maryland Meter Company, of Baltimore, I think about 1890. This meter is so constructed with a "Seth Thomas Clock" as to show clearly to any consumer the amount of gas consumed during each hour, day or night, and is a "Shelter in the time of storm" to clerks in the office of many gas companies.

In preparing this modest paper, which the writer looks upon as a little sermon on the subject with which he is most familiar, he cast about for a text, and he found it in a society magazine under the head of definitions, in which the gas meter was defined, as near as memory recalls, as an instrument designed to encourage matrimony by inducing economy in illumination, and to discourage daily baths. Probably the writer of this epigram had no thought beyond that of gaining a smile by taking a fling at a favored target for ridicule; but to the writer there was contained, in this semi-humorous remark, a text that furnished food for thought. It is quite unlikely that to either the ingenious Malam or the industrious Clegg did the thought occur that the meter, which they so patiently tried to perfect so that it would prove to be an accurate measure, would have any relation to the cleanliness of the nation, or, to carry the thought a little further, on the preparation of the world's food supply. Yet such is the case.

The gas measured through meters that are the evolution of the creation of Malam and Clegg is largely used to not only light the dark places, but to cook the breakfast, and often times the dinner and supper, of the better part of the civilized world. Yet more, even where civilization has elapsed into the almost barbaric splendor of the lobster palaces of "The Great White Way," do we find the Bunsen burner roasting the canvas back duck or broiling the toothsome sweetbread, and the more modest highways are dotted with the dairy lunch, with the gas heated griddle cooking "flapjacks" for the million.

And, as for baths! The meter man can hardly supply the demand for meters for the measurement of gas sufficient to keep the household comfortable and "in hot water." Indeed, a little reflection will show that, when the sarcastic writer referred to the meter as a deterrent of bathing, he unconsciously struck a chord that covers the gamut of gas making from 1816 to 1911.

The Pacific Gas and Electric Company, which, of course, includes our friend Mr. Leach's division here in Oakland, advertise themselves as the "House of Courtesy," and as this concern is managed by men of well known truth and probity, this claim of theirs will not be denied. But what factor in their whole working corporate body is most conducive to this happy relation between them and their customers? Is it not the correct meter?

Experiences.

[Edited by MR. JOHN D. KUSTER, for the Nineteenth Meeting, Pacific Coast Gas Association.]

Evidently few incidents have occurred during the past year in the gas fraternity to warrant our members making any special record of them, if we are to judge by the few replies to the appeal sent out to gas men for their "Experiences." To those who have so kindly responded I wish to express my hearty appreciation. To all our members, I wish to emphasize the necessity of your making a record of some of the many things that happen, and send them to your Experience Editor next year. You will not only be doing your Editor a service, but the Association as well, and at the same time you will be doing something for yourself in helping to make our records and meetings more interesting and instructive.

While we have but a few I believe some are of particular interest, and merit space in the permanent records of the Pacific Coast Gas Association.

No. 1.—*A Quick Connection.*—On one of our machines the cast iron connection, between the blast-tee and generator-head, cracked clear around, and opened about $\frac{3}{16}$ inch. We tried several ways to stop the leak; but these would not last long. At last we made a form out of galvanized iron and filled in around the tee with sand, and after that we had no more trouble with the leak.

No. 2.—*How a Canning Company was Satisfied.*—A canning company, supplied by a 100-light meter, was dissatisfied with its gas bill, claiming that the factory could not possibly use the amount of gas registered by the meter. We suggested the placing of a second meter as a check; the management of the canning company dared us to do so. We "called them," and placed a new, 100-light meter, making the old one supplemental to the new meter. Then we took daily readings for two weeks; and, after the first day, as both meters checked, the canning company was satisfied.

No. 4.—*How a Deposit Demand was Arranged.*—A demand was made on the office of a gas company for the installation of a gas meter, and the office requested the usual deposit of $5 from the prospective consumer, who instantly refused payment of same. There appears to be a law that meters must be set on request, within a certain time. The company was quite unwilling to open an account with this party unless some guarantee of payment was given, as he was known to be evasive if not indifferent to collectors. The party had demanded a meter in writing, so it seemed up to the company, and a prepayment meter was set. Then the party took up the question of payment in advance, holding that we could not collect until after the goods were delivered It then looked like our party had it on us. But not quite, for the prepayment was left connected and the company dropped in the first quarter, thus giving the party 25 cents worth of gas. Our party found no legal objection to this method of service.

No. 5.—*Installing New Connections in Old Gasholder.*—About a year ago we installed two 30-inch additional inlet and two 30-inch additional outlet connections for a 300,000 cubic foot holder, set in an underground brick tank, 24 feet deep. The undertaking was really nothing but a matter of mining, so we did not anticipate any serious

trouble. However, when we reached a depth of 15 feet we struck water, and from that time until the job was completed we had to handle about 200 gallons of water per minute in each shaft. All the joints in the pipe were calked with lead wool, using air-hammers to drive it—the total depth of each shaft was about 35 feet. We drifted in about 15 feet and then erected the riser pipes. The greatest part of our trouble with the entire job was to clean the tar out of the holder pit. This holder had been in commission 21 years and had 7 or 8 feet of heavy tar in the bottom. We finally moved this tar by means of a duplex steam pump, lowering it with a chain-block until the suction end was submerged in the tar. By this method we obtained very good results. The exhaust steam from the pump was run through a coil of pipe in front of the suction, so as to heat the tar and make it more fluid.

A Dangerous Repair Job.—Recently, while patching a hole in the side of a 300,000 cu. ft. relief holder, just after the sheet containing the hole rose out of the water (which, of course, allowed the gas to escape) and the gas was ignited by a spark. We immediately shut down the generators, stopping the flow of gas into the holder, and speeded up the exhauster to take the gas out of the holder to draw the leak down and seal it. However, the heat of the fire being so great that the gas inside of the holder expanded, it took us 15 minutes to get the sheet containing the hole below the water. Evidently this appeared a very much more serious thing than it really was, as the fire department, on arriving and finding that it was a gas holder burning, immediately took steps to protect themselves, as they feared an explosion. And nothing we could say would induce them to believe that there was not going to be an explosion.

Rates for Gas Service.

[Prepared by Mr. C. L. Cory, C.E., for the Nineteenth Meeting, Pacific Coast Gas Association.]

In all probability more money has been expended in the various States and cities of the Pacific Coast, during the past decade, either directly or indirectly, in connection with litigation or ther phases in determining the rates for gas service, than has been the cost, in the same territory, of all experimental and other related scientific and engineering work of improving the methods and reducing the cost of the manufacture, distribution and sale of gas. Certainly, there is no other problem connected with the gas industries more important than that of rates. There is a spending and receiving side to every organization, and it is the difference between what is spent to provide a commodity, and the amount for which the commodity in the aggregate is sold, which establishes the desirability of the business. Unlimited commendation is due the gas engineers of the Pacific Coast for the work they have done in recent years to improve the processes of gas manufacture, including all of the notable advances in high pressure distribution and improvement of service, as well as the increased economies and reduced cost of production. It is but natural, therefore, that we should be equally interested in the consumption and use, and especially the proper rates to be charged for gas, not only from the standpoint of the manufacturing companies, but quite as much must the consumer's position in the matter be given due consideration.

The term "public utility" has been defined as meaning and embracing each "corporation, company, firm, individual and association, such as express, telephone, telegraph, sleeping car, freight-line, equipment, electric light, gas, natural gas, pipe line, water works, messenger, signal, union depot, water transportation, heating and cooling companies; street, steam, suburban and interurban railroad companies; also any plant or property owned or operated by such companies, corporations, firms, individuals or associations."[1]

It is such companies as above indicated that provide service to the public, and the rates for such service should be based primarily upon the cost of providing adequate and satisfactory service. To determine this cost is many times a difficult task, and especially so when the devices and system required to provide the service are not fully developed and standardized. As an illustration, the rates for freight and passenger service between San Francisco and Los Angeles, whether by steamer or by rail, have been established for such a length of time that it is not a difficult matter to decide upon the reasonableness of such rates; and, therefore, rates may be established that are more or less permanent and not subject to material revision from year to year. However, to determine adequate freight and passenger rates between these cities, using the automobile or the aeroplane, would be exceedingly difficult, if not impossible. However, it is not to be concluded that in future years, service, both passenger and freight, with the newest aerial devices for transportation, may not become so well established, reliable and satisfactory that rates of service might not be readily determined.

The business of manufacturing and supplying gas has been very thoroughly standardized, although progress is constantly being made in the methods of manufacture as well as the increased economies in distribution. High pressure systems have been introduced in recent years. The methods of gas manufacture from California crude oil on the Pacific Coast have been perfected within a comparatively recent date. As compared with many other public utility enterprises, however, the gas business has been established so long that the determination of the cost of services is comparatively easy.

The cost of delivering gas to the consumer necessarily embraces the determination, among other things, of a fair valuation of a plant that is devoted to public use, the gross earnings under any given set of rates and the reasonable operating expenses when depreciation of the physical property and adequate returns on the investment are included. The general information necessary, in order to arrive at the proper rate for gas service may, in general, be subdivided as follows:

1. The valuation or appraisal of the plant used for the manufacture and distribution of gas.

2. The annual cost of operation, including a complete segregation of all accounts, set forth in such a manner as to indicate the different operating costs per 1,000 cubic feet of gas manufactured and sold.

3. A statement of the quantity of gas made and sold for a number of years, preferably not less than 5, and the total revenues received each year from the sale of gas.

Valuation.—There are a number of fundamental principles involved in obtaining the valuation of a gas plant and system to be used in determining a proper rate for gas service. It is quite as important that corporations themselves should determine for each year the valuation of the system upon which a return on the investment is to be earned, as it is for this valuation to be determined by any public body, whether only incidentally or directly concerned with the fixing of rates.

The original cost of construction, the cost of reconstruction or reproduction new, the cost of reproduction new (less depreciation), the present value, the assets and liabilities taken as a whole, the capitalization, the bonds and stock outstanding, and the gross earnings and operating expenses, are all elements that should be considered in determining the valuation of a public utility for rate fixing or other purposes. Each of these elements constitutes evidence of what is fair value. The original cost, the cost of reproduction, new, and the present value, bear a very close relation to the physical property of the plant and are, therefore, most usually considered of the greatest importance in determining the proper valuation. Which of these theree elements gives the best indication of the value will vary in each individual case.

The original cost can, if all records of construction are available, be usually determined by what is known as the historical method. The conditions under which the construction of the system was carried out, whether all done at once, or extended from year-to-year as the growth of the business required, will be covered in this method of determining the original cost. When proper charges only are included and no mistakes have been made, for which the builders may be properly held responsible, the original cost represents the investment that has actually been made in the physical property of the plant.

The rapid growth of many systems, however, and the rapidity with which changes have been made, coupled with inadequate records, make it many times practically impossible to determine the original cost with any degree of reliability. Much depends upon the manner in which accounts and records have been kept. In order to be of value they should show the actual cost of the different parts of the plant, segregating labor and material, the cost of engineering, superintendence, management, and administration, the amount that has been allowed as interest on the capital during the construction period, the cost of financing, which will include the discount at which bonds were sold, the basis upon which stock has been issued or sold, all promotion expenses, and similar items. It is not difficult to imagine records which would give the above information, but I venture to

1. Laws of Ohio, Langdon Act, 1910, p. 429.

say that most rare is it that the original cost of a gas plant operating at the present time may be obtained entirely in such a comptete and satisfactory manner.

Moreover, the original cost even when determined in full detail, may not be the valuation upon which reasonable returns should be allowed. It is a question of equity between owners of the plant on one hand and the customers on the other. The owners are entitled to a reasonable return upon what they have invested, while the customers should not pay rates for service that will yield more than an adequate return upon the investment necessary to supply such service. If the plant has been built when prices were abnormally high, and money has been lost through lack of reasonable skill, excessive promotion fees and discounts, private understandings between the builders of the plant and the contractors, the original cost may be decidedly greater than the valuation on which the investors should be allowed to earn.

Conversely, it may be that the plant was constructed when the prices for labor and material were excessively low, or a great portion of the plant may have been obtained through failure of previous owners to successfully carry on the business, due either to temporary financial difficulties or, what has been more common, great strides in the methods of manufacture, resulting ultimately in foreclosure. In such a case the original cost would hardly be a fair figure upon which to base the valuation for rate fixing purposes, as the foresight and enterprise of the present owners certainly justify some regard.

The original cost is so rarely available that the cost of reproduction, new, of the plant usually must be determined. A great deal of engineering knowledge and detail work are necessary to obtain this result. Invariably, a complete inventory of the physical property is the first step required. The only satisfactory inventory is one obtained as a result of actual inspection and enumeration, aided, as much as possible, by all the records available, and supplemented by such additional information as may be had from the various heads of departments and other employees of the company. Such an inventory should include, for each different part of the property, the amount of labor and material required to provide, ready for operation, each element of the completed plant. The next step consists in obtaining from all data obtainable a suitable price per unit. not only of each element of the property, but the labor and material required to install the devices in position ready for operation. It is well in determining such unit prices to take a period covering at least 5 years and obtain the average in this manner. The total and average cost of the labor and material that entered into the plant, ready for operation, is thus obtained.

(To be Continued.)

Important Patent Decision on Gas Producer Operation.

The following communication was forwarded to us recently by Mr. E. Y. Sayer, Vice-President and General Manager of the Improved Equipment Company, New York city:

Judge Brown, of the United States Circuit Court of Massachusetts, has recently handed down an important decision in favor of the complainant in the case of the Combustion Utilities Corporation *vs.* Worcester Gas Light Company.

Something over three years ago the Doherty patents were infringed by a prominent builder of gas benches for the Worcester Gas Light Company, of Worcester, Mass. Suit was at once brought against the Gas Company by the Combustion Utilities Corporation, as owners of the Doherty patents. The decision fully upholds the validity of the patents, and finds that all the claims in suit were infringed.

This suit has been a long and strongly contested one, commanding the best legal talent, and bringing out many points of law and principles of combustion engineering which lend to it a special interest. The niceties of the distinctions can only be understood by a more or less general knowledge of the questions involved.

Stripped of technicalities, the object of a gas producer is to secure a partial combustion of the fuel in the producer, resulting in the production of combustible gases which are burned for some purpose external to the producer. In this partial (or primary) combustion of the fuel there is liberated in the producer an amount of heat in excess of that which can be carried away by the evolved gases. The result in an ordinary producer is that the temperature within the fuel bed is so excessive a large portion of the ash intermingled with the fuel is melted or fused into a hard clinker, which materially interferes with the draft and prevents efficient operation of the producer.

In an attempt to eliminate the formation of clinkers it has been the universal practice in the past to use either steam or water beneath the grate bars of the producer, it being understood that, if water is used, it is for the purpose of generating steam, which passes up through the fuel bed and there has a restraining influence on the temperature.

The use of water or water vapor to restrain the rise of temperature throughout the bed of incandescent fuel is uneconomical and objectionable, because there is a loss of heat due to the fact that, as water must be heated and evaporated from about 60° F. to steam at a temperature at which the waste gases, or products of combustion, ordinarily leave the furnace stack and pass into the atmosphere, say at 800° F. or over, there is a resulting loss of about 1,400 B.T.U.'s for each pound of water thus evaporated. This is shown in the table.

Mr. Doherty's invention entirely does away with the use of water and steam for regulating the temperature of combustion and preventing clinkers, thus obviating all the evils attendant upon their use, and the invention consists of a process of employing a decombustible gas, preferably carbon dioxide mixed with air, and introducing this draft current to the fuel bed of a producer for the purpose of regulating the temperature, and has for its object not only the regulation of combustion and prevention of clinkers, but also a considerable reduction in the amount of fuel required to obtain a given result.

	B.T.U.
Heat required to raise 1 pound of water from water at 60° F. to 212° F.	152.00
Water at 212° F. to steam at 212° F	966.00
Steam at 212° F. to steam or gas at 800° F. (588 by .48)	282.24
Total	1,400.24

Mr. Doherty discovered that the temperature throughout the entire incandescent bed of fuel in a producer could be controlled by properly proportioning in the draft current the amounts of air and waste products of combustion, and, if desired, primary combustion could be carried on at a temperature below that at which clinkers are formed. In carrying out the process the mixture of carbon dioxide and oxygen should be introduced to the fuel bed at such a temperature, and the proportions of carbon dioxide, free oxygen and free nitrogen should be such that the fuel bed is kept below the temperature at which clinkers occur, heat being given up to the gases from the fuel bed.

Among the citations, as set forth by the defense, as indicating anticipation in the prior art, were United States and foreign patents, covering the return of part of the products of combustion to the producer for the purpose of utilizing what would otherwise be waste heat; also, processes for smokeless operation of furnaces by burning the free carbon in the waste gases to colorless carbon dioxide; also, a process for the production of a long, rolling flame, suitable for limekiln operation, by returning a portion of the waste products of combustion to the space beneath the grate bars of a furnace. The Court held, however, that these patents had for their object something entirely distinct and different from the fundamental bases of the Doherty patents, which were the regulation and control of combustion.

Judge Brown, in his opinion, stated that "Heat regulation by draft regulation is, of course, obvious; but Doherty goes beyond this. His process clearly shows the conception of temperature regulation by a definitely regulated mixture of air and products of combustion admitted to the fuel bed, for the definite purpose of operating a gas producer at a temperature lower than the slagging or fluxing point. * * * There was, so far as I have been able to learn from the prior patents, no one before Doherty who so employed this temperature reducing effect of the waste products of combustion, or so regulating the proportion between such products and air as to maintain a temperature suitable for a gas producer, and such as practically obviated the formation of clinkers, a defect which previously was considered unavoidable and put up with as a necessary evil. * * * Doherty produced a new result in the art, a practical, non-clinkering gas producer furnace, and made an important contribution to the art by the disclosure of what could be practically accomplished by a new way of applying old means."

The Doherty apparatus patent was also held by the Court as having been infringed. The patent has to do with the means and methods employed to regulate the mixture of air and diluent gases. Here again the prior art was advanced in defence, and earlier patents were offered as evidence of anticipation. But while it is possible by analysis of the structures of the prior art to discover one by one features corresponding to the features of the Doherty apparatus, yet in no one case were they combined in the same way and for the same purpose as in the patent at issue.

In closing his opinion Judge Brown stated that "A very protracted and careful examination of the record convinces me that Doherty made a meritorious advance in the art; that he was the inventor both of an apparatus and a new process. While there is much ground for discussion in that part of his specification which relates to the theory of operation, and his claims, yet it seems reasonably free from doubt that Doherty's apparatus for regulating combustion was a new structure which is not anticipated in the prior art, and that it embodies the discovery that by a definite control of the mixture of air and waste products of combustion, and by a definite regulation of the temperature of his mixture, he could accomplish a valuable result which could not be accomplished, and had not been accomplished, merely by using the waste products of combustion and air without regard to their exact proportions, the thoroughness of mixture and the temperature at which the mixture should be introduced. Exact adjustment of these as means to the specific and novel end of maintaining temperature within a maximum limit, for the elimination of the undesirable slag which accompanies the use of the same means not exactly adjusted, and applied without regard to and without attaining this specific improvement, distinguishes Doherty broadly from the prior art."

The rapid depletion of the world's source of coal, and our increased efforts towards its conservation, have focused attention in recent years on the gas producer as a possible solution of the problem. Any decision by so high a tribunal upon the legal points involved in a patent suit relating to gas producers and their economical operation is, therefore, of interest to the engineering world.

The decision of the C urt in this case fully sustains the validity of the Doherty patents, and the evidence was convincing as to the entire success of the Doherty principle in accomplishing the results desired. It is expected that important business developments will turn upon this decision, which will command the attention of all interested in gas producer operation.

Small Output of Kansas Coal. Strike of 1910 Reduces Production by Two Million Tons.

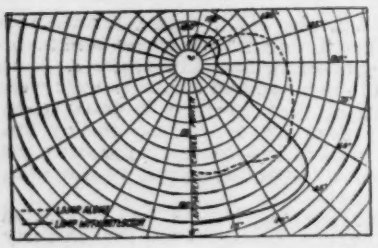
The total coal production of Kansas in 1910, as compiled by Mr. Edward W. Parker, of the United States Geological Survey, in cooperation with the State Geological Survey, amounted to 4,921,451 short tons, valued at $7,914,709.

Kansas lost heavily in coal production in 1910 by reason of the coal strike. In 1909, when industrial peace reigned throughout the coal-mining States, Kansas produced 6,986,478 short tons, and in the boom year 1907 the output amounted to 7,322,449 tons, the maximum for the State. In 1910, when 80 per cent. of the men were on strike and the period of idleness exceeded that of activity, the production decreased to 4,921,451 short tons. Compared with 1909 this shows a loss of 2,065,027 short tons, or 29.56 per cent. The decrease in Arkansas amounted to 19.8 per cent.; in Oklahoma to 15.17 per cent., and in Missouri to 20.6 per cent. As in the other States Kansas prices were naturally advanced by the shortage in fuel and the decrease in value was relatively less than the decrease in quantity. The value of the Kansas product decreased from $10,083,384 in 1909 to $7,914,709 in 1910, a loss of $2,168,765, or 21.5 per cent. The average price per ton advanced from $1.44 to $1.61.

The number of men employed in the coal mines of Kansas in 1910 was 12,870, of whom 10,346 were idle during the strike. The average number of days worked was 148 and the average number of days idle was 153. The total working time was 1,906,151 days and the total idleness was 1,578,027 days. The average production per man was 382 tons annually and 2.58 tons for each working day. In 1908, when 13,916 men were employed for an average of 181 days in the production of 6,245,508 tons, the average output per man was 449 tons for the year and 2.48 tons for each working day.

Management & Commercial Methods.

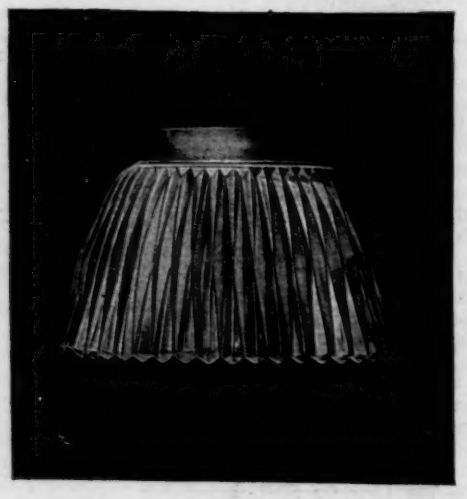
Vertical Distribution Of Light About "Melilite" Reflector No 4162 with Inverted Gas Lamp Equipped With Bottom Frosted Chimney Tested For Gillinder & Sons Inc



Electrical Testing Laboratories

A New Glass Shade.—The requirement that a shade or globe be a thing of value as well as beauty, instead of an accessory, to a gas lamp is claimed to have been met in the "Melilite Reflector," now being placed on the market by Gillinder & Sons. The shade, and a test showing the photometric curve, are illustrated herewith, from which it is evident that the eye will be shaded and the light efficiently redirected for illuminating spaces within a radius of 45° below the lamp.

Another Type of Shade.—A shade used for similar purpose to the one described above, but with diamond shaped prisms on the surface, is being marketed by the Macbeth-Evans Glass Company. The picture tells the story. Both these shades are of the reflector variety, which have become popular through the newer types of electric lamps.



Publications.

[All Publications, Catalogues, etc., mentioned below, are kept in our office for the convenience of our patrons.]

More Baltimore Mailing Cards.—The successful method of the Baltimore (Md.) Gas and Electric Company keeps urging the use of gas burning appliances by means of post cards, giving examples of installations, is being continued. The latest edition includes: "Baking at the Pure Food Show;" "A Furnace Water Heater Connection;" "Cooking" at Gardner's Hotel, at the Kelso Home, St. Vincent's Male Orphan Asylum. Also, examples of both interior and exterior lighting by means of Welsbach arc lamps. Write Mr. H. K. Dodson for a set.

Recent Patent Issues.

Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 10 cents.

1,004,024. Gas Producer Apparatus. J. A. Herrick, New York city.

1,004,057. Meter Connection. G. W. McKee, Rockford, Ills., assignor to Eclipse Fuel Engineering Company, same place.

Items of Interest
From Various Localities.

Those interested in the proposed gas plant for Manila, the Philippine Islands, should remember that bids therefor must be in the hands of the Manila authorities on or before December 16th next. The details of the proposition, and all other necessary information respecting it, can be obtained by communicating with the Bureau of Insular Affairs, Washington, D. C.

Mr. T. D. Bergen, writing to us from Charleston, S. C., under date of the 6th inst., says: "The authorities of Sumter, S. C., have assented to the recent action of the City Council in granting to Mr. Edward L. Rieha and associates, of Baltimore, Md., the sole privilege of manufacturing and selling gas in the place named for a term of 50 years. It is agreed in the tenets that construction work must be commenced within 6 months after the acceptance of the franchise, and that the generating and distributing sections of the system must be in complete working order within 12 months.

Mr. Van Lear Black has been elected a Director in the Baltimore Consolidated Gas, Electric Light and Power Company, vice Mr. S. Redding Bertron, resigned.

Mr. L. H. Rourke, Commissioner of Public Works, Boston, Mass., is inviting proposals (at his headquarters, Room 49, City Hall) for furnishing and erecting gas post extensions and the installation of inverted gas lamps in such streets, parks and alleys as may from time to time be designated by the city. A bond in $10,000 for faithful performance will be exacted. The approximate number of lamp posts and burners is 11,000. Bids should be inclosed in sealed envelope marked "Bids for furnishing and erecting Gas Lamp Post Extentions," the message to be left at the "Hearing Room," second floor, City Hall, before 12 M. of the 24th inst. The Commissioner stands ready to give all necessary information for the guidance of proposers, by forwarding inquiry as above indicated.

The Gas Machinery Company, of Cleveland, O., has been awarded a contract for furnishing inclined benches with silica retorts and setings, by the C. H. Evans Engineering Company, of Chicago. These benches will be installed in the works of the Gulf Coast Gas Company, of Biloxi, Miss., which plant is controlled by and will be operated by the C. H. Evans Engineering Company. Mr. Evans has made a great success of the water gas installation in Biloxi, and, through his efficient methods of operating, he has increased the demand for gas to the point where it becomes necessary to add a coal gas plant to the generating division of the works.

In connection with the efforts of "Mister Wyatt" to organize the workmen of the Consolidated Gas Company, of this city, the following "inspired figures" will go to show how the Company deals with its men: "Since its organization the Gas Companies Mutual Aid Society of New York, up to September 1st, 1911, paid $117,000 to the beneficiaries of deceased members, and the sick benefits amounted to

$47,271. The Society now has well over 3,000 members, representing the Company's various branches in Manhattan, Long Island City, Astoria and the Bronx. Each member contributes 50 cents a month to the mortuary fund, out of which, in the instance of deaths, $300 is paid; also, 30 cents a month to the sick benefit fund which entitles the sufferer to free medical attendance and $6 per week for 12 consecutive weeks in anyone year when incapacitated. The Consolidated Gas Company contributes 50 cents to the mortuary fund and to the sick benefit fund for each dollar paid in by members of the respective funds; it also pays all the charges on account of visits of physicians, and for the necessary medical supplies. Thus far, the Company has paid $56,119 to the funds, and the cost of medical, surgical and like supplies amounted to $30,000. The physicians (5 in number) have made 25,000 calls to sick members, which has saved the sufferers $50,000 on account of the sick visits, some $6,000 for supplies and $50,000 in sick benefits, amounting in all to $106,000. Pretty good for a grinding corporation!

On a verified petition, sworn to by the affidavit of A. L. Swett, President of the Medina (N. Y.) Gas Company, Warren B. Hooker, Judge, appointed Milford B. Childs receiver for said Company. According to the affidavits the bonded indebtedness, respecting which the interest is in default, amounts to $12; that the plant is in need of immediate repairs: that the Company is being operated at a loss; and that President Swett declines to put up further monies for relief.

The history of the Medina Company is a lengthy tale of woe. It was in 1890 that that great financial meteor (A. Lincoln Fennessy) flashed over Medina. He bought the whole outfit for $16,000, and forthwith bonded it for $40,000 first mortgage 6's, then plastered the outfit with $40,000 "common" stock, full paid and unassessable. He then spent about $2,500 on the plant, got rid of the bonds, and accepted whatever he could get for the "common"—very common—shares. He then induced the late Mr. William Curry to join in the venture, the latter giving up quite a bit of cash for the "common"—the bonds had been planted in various acreages "up Medina way," and elsewhere. Mr. Curry eventually sold a controlling interest in the concern to Mr. A. L. Swett, who has done his best to help along honestly a losing venture; but at last found the burden too heavy.

One of the handsomest, most attractive booths in the Mechanics' Fair exhibit now going on in Boston, is that of the Boston Consolidated Gas Company. It is central and commodious and is beautifully finished in dull ivory. The display of the possibilities of gas on the street, the shop, the public building and the homes is made in most effective way and manner.

Messrs. Bartlett, Hayward & Co., of Baltimore, Md., are under contract to construct for the Springfield (Mass.) Gas Light Company a coke storage structure on a plot at State and Water streets. The building, which is to be of the nature of a huge iron bin, set on a concrete foundation, is to be of the dimension, 46 feet square and 36 feet in height. It will be fitted with automatic loading and unloading apparatus.

A correspondent in Cedar Rapids, Ia., forwards the following: "The Cedar Rapids Gas Light Company, having a curiosity to know who can best bake bread in that city, and 'The Frick-Stearn-Russell Company' being beset with a lingering desire to determine a like thought, the named concerns finally clubbed forces, mapped out a plan of campaign, and offered a prize for the 7 best baked loaves submitted in the contest. After the matter is determined the bread will be sold and the proceeds will be given to some charitable institution in the city, the award in the distribution instance going to the institution receiving the greatest number of votes in the contest. The first prize is a $65 cabinet range, and the second prize is a $35 portable lamp—both of these are from the Gas Company. The third is a purse of $25 in gold, from the Frick-Stearn-Russell folks. The other prizes are: No. 4, $15 cash; No. 5, $10; No. 6, a gas iron, completely set up; No. 7, a 48 pound bag Occident flour. The only stipulation is that the contestant must be a resident of Cedar Rapids, or of its Marion or Kenwood suburbs, and that the flour used shall be of the Occident brand."

At a special meeting of the Directors of the Georgetown (D. C.) Gas Company, to be held shortly, the plans for the new office building for the Company at Wisconsin and Dunbarton avenues (56 feet by 80 feet), as prepared by Messrs. Marsh & Peters, will be considered. The structure will involve an expenditure of approximately $50,000, and the initial sketches of the building show that it will be an ornament to the beautiful city in which the Company flourishes.

The Exeter (N. H.) Gas Company folks are now housed in their new office quarters, which are a decided improvement over those heretofore occupied.

The new rates for gas and electric currents furnished by the Clinton (Mass.) Gas Light Company, as recommended some weeks ago, by General Manager George B. Spring, are now operative. Under the new schedule the prevailing rates are: Gas, gross, per 1,000 cubic feet, $1.75; net, $1.55, for 10,000 cubic feet, as to the first 2,000; and $1.30, net, for the balance. Electric current, 18 cents per kilowatt; net, 16 cents for first 50-kilowatts, and 12 cents, for all kilowatts used per month in excess of 50.

"G. L. H.," writing from Albany, N. Y., under date of October 6, says: "Mr. A. J. Smith, Superintendent of the Concord (N. H.) Light and Power Company, has organized the employees of the Company into a body known as the 'Gas Educational and Social Club.' Meetings are to be held the third Thursday of each month, at which speakers will be on hand to talk on subjects of interest to those connected with the gas industry. Of course, it can easily be taken for granted that the social side of affairs will not be neglected. The officers for the first year are: President, C. H. Saunders; Vice-President, A. J. Brown; Secy-Treas., H. W. Odlin; Executive Committee, Messrs. C. H. Saunders, A. J. Brown and A. J. Smith."

The Western United Gas and Electric Company has authorized the Lloyd Construction Company, of Detroit, Mich., to construct in the plant that the former is erecting at Lockport, Ills., four purifying boxes, 25 feet by 30 feet by 15 feet, the body to be steel and concrete construction; the boxes are to carry 3 layers of trays. The covers are to be handled by means of gantry cranes, and the oxide by means of a travelling gantry and grab buckets. The necessary valves are included, and the outfit will easily handle 3 millions cubic feet per day.

To eke out the present output of water gas from the North Shore Company's plant at Waukegan, Ills., a Semet-Solvay type of plant is to be added to the present generating equipment.

"The 'Carnival' in staid Cambridge was on last week, and it surely was worth much to the district and its residents. While the main object of its organizers has been to give Cambridge an advertisement as a thoroughly up-to-date, busy industrial community, and to bring its merchants into closer touch with each other, through the medium of a common effort to do credit to their home city, the amusement part of the display was not forgotten. And it was in this connection that the artificial lighting people were undeniably busy. The avenue between the armory and the City Hall was sentinelled by gas arcs and bespangled with festoons of electric light. That this was on a huge scale may well be understood when it is reported that over 6,000 lamps of one sort or another were in service. And perhaps the most attractive point in the illuminations was, that where the showmen took up their stands, the lighting of the surrounding spaces having been accomplished by means of flaming-torch devices, some of which were the outcome of the busy brains of the Barnes-Kennedy combination, a combination that never wastes time shooting at the stars. It might be vicariously mentioned in passing that the gas and electric current used in the illuminations noted were supplied by the local Gas and Electric Lighting Companies without charge.—B. B. B."

"B.," writing from Fitchburg, Mass., under date of the 12th inst., remarks: "I have not seen anything in the Journal respecting the advances made in the joint concerns, known respectively as the Leominster (Mass.) Gas Light Company and the Leominster Light, Heat and Power Company, so a word or two ament the matter may not be unwelcome. Last month the executive office of both concerns were removed to new and spacious and beautiful quarters in the Mayo Building. The offices are splendidly fitted up, and their arrangement is such as to please patrons and add comfort to the men who are busying themselves in the accounts, showing the goods of various sorts, explaining odd happenings away, and the like. Superintendent Strong and Mr. Keyes (formerly at Northampton), who is in charge of the Company's sales' division, are quite proud of their housings. They'll welcome anyone who calls, in good old New England style."

The Market for Gas Securities.

There was shown some animation in the market for local gas shares last week, and while the net change was slight, it is nevertheless reassuring that the net, on a comparatively large volume of trading, was in favor of the holder. Consolidated opened to-day (Friday) at 138 to 138¼, which is almost a point up from the opening last week. One odd thing in connection with the output of the local companies, so far this fall, is that the normal increase in it is relatively lower in per cent. this year than for some years past. The sunny days and remarkably even temperature of the season are responsible for this condition.

In general, out-of-town shares are higher. For instance, Peoples, of Chicago, is up 2¼, and Lacledes are 1½ better than last week. The demand for bonds continues.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

OCTOBER 16.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	138	133¼
Central Union Gas Co. — 1st 5's, due 1972, J. & J.	3,000,000	1,000	103	105
Equitable Gas Light Co.— Con. 5's, due 1932, M. & S.	1,000,000	1,000	115	118
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.— 1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98½	100½
New York and East River— 1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union— 1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	50	70
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	134½	137
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	250,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	¾	½
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	6
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106½
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,683,750	100	90½	91
Preferred	3,036,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084	—		—
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,000	—		—
Con. Gas Co., Baltimore City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	3,500,000	—	103	105
Detroit City Gas Co.	6,580,000	—	—	50
" Prior Lien 5's	5,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	108	108½
Indianapolis	2,000,000	—	78	83
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	92	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,322,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	104	104¾
Preferred	2,500,000	100	114	120
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,370,000	50	143	145
Madison Gas and Electric Co. " 1st Mtg. 6's	400,000	1,000	106	108½
Massachusetts Gas Companies, of Boston	25,000,000	100	90½	90¾
Preferred	25,000,000	100	97	97¾
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	103½	106
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.— 1st Mtg. 5's	1,000,000	1,000	100	102
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	106
Extension, 6's	600,000	1,000	112¾	115
General Mortgage, 5's	3,447,000	1,000	97	98
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,800,000	200	448	450
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	361	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 18, 19, 20, 21, 1911. St. Louis, Mo. Officers: President, Donald McDonald, Louisville, Ky. Secretary, A. B. Beadle, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting, ———— Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Next meeting, Syracuse, N. Y., Nov. 1911. Officers: President, R. M. Searle, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street, New York City.

Gulld of Gas Managers of New England.—Annual meeting, March, 1912. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, time, March, 1912, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, F. E. Newberry, Dixon, Ills.

Illuminating Engineering Society.—Annual meeting, Sept. ————1912, ———— Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Miliar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, Albert J. Marshall, 16 East 40th street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, A. L. Eustice, 105 North Wabash avenue

Indiana Gas Association.—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, May, ——, 1912; Clinton, Ia, Officers: President, G. W. Clabaugh, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, Sept. 1912. Manhattan, Kas. Officers: President, B. F. Eyer, Manhattan, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. ————1912;———— Officers: President, F. W. Blowers, Kalamazoo, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1912; St. Louis, Mo. Officers: President, F. E. Murray, Louisiana, Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, October 23-28, 1911. Denver, Officers: President, C. N. Stannard, Denver; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May, 1912, Kansas City, Mo.; Officers: President, A. B. Macbeth, Independence, Kas. Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, third Wednesday in February, 1912; Boston. Officers: President, J. A. Coffin, Gloucester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn, Belmar, N. J.

Ohio Gas Association.—Annual meeting, February 6 and 7, 1912, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary-Treasurer, T. C. Jones, Delaware, O.

Pacific Coast Gas Association.—Annual meeting, Sept. ————1912, ———— —Officers: President, W. Baurhyte, Los Angeles, Cal.; Vice-President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 1912, Williamsport, Pa. Officers, President, C. W. Butterworth, Millon, Pa; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 254 West 39th street, New York city.

Southern Gas Association.—Annual meeting, April, 1912, Jacksonville, Fla. Officers, President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. April 27, 28, 29, 1912; Houston, Tex. Officers: President, J. E. Carroll, Beaumont, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 15 and 16, 1912, Milwaukee, Wis. Officers: President, H. M. Buck, Waukesha, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.